

Computer analyses of the historical development of
Bukhara city from the 5th c. B.C. to the 19th c. A.D.

by
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Submitted to the Department of Architecture on May 8, 1995 in partial fulfillment of the requirements for the degree of
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Abstract

Based on the new architectural excavations by Prof. E. Nekrasova, the thesis will re-read and re-analyze the historical development of the Ark and the Shahrستان, the historical cores of the city of Bukhara, and the relationship between them in the formation of the city's urban fabric. Most of the previous theories on the development of Bukhara were based on old historical chronicals. Analyses of the urban fabric were not supported by actual archeological facts. Drawing from my extensive fieldworks and surveys in Bukhara during the last two years, my thesis intends to combine the most acceptable ideas and facts into one persuasive proposal.

The theoretical analysis of the paper argues with proposals made by two scholars from Uzbekistan. It takes into account the theoretical framework from both of them and applies it to my analysis of the historical formation of Bukhara.

The first is the proposal of Prof. Notkin, who has based his theory of the city's development on the reading of the

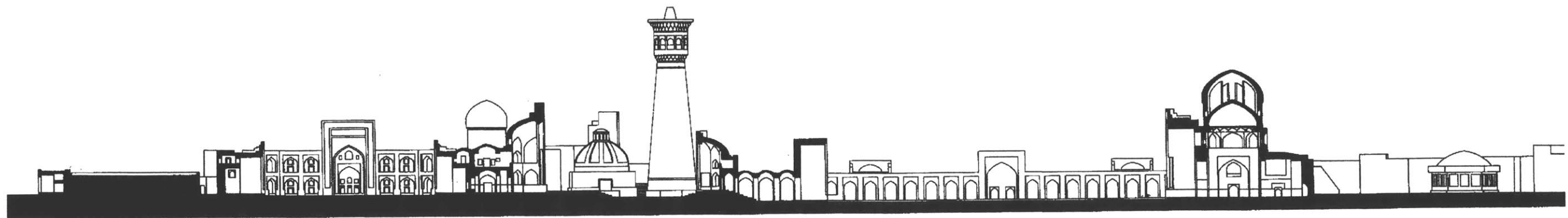
urban fabric. He believes that the city of Bukhara grew gradually and extended its borders in all directions throughout the city's development.

The second proposal, by Prof. Bolshakov, contents that hte city of Bukhara was created according to Roman rules for a city grid, and then subsecuently deformed over the course of 2,000 years. Based on the generalized understanding of the city grid, Prof. Bolshakov presented a theory of the city plan in the beginning of its existance.

Beginning with the 5th. c. A.D. through the 19th. c. A.D., my thesis will analyze the urban pattern of Shahrستان and its relationship to the Ark in the smaller scale. Using architectural excavations within the Shahrستان, my thesis will interpret the words of Narshahi, a writer of the 10th. c. A.D.who said that "Shahrستان was divided into four parts and every part was organized as a village"- in a new way. Many scientists interpreted this sentence in the relation to the two roads that crossed the Shahrستان from the North to the South and from the West to the East. Recent archaeological excavations reveal several patterns of the old wall in different parts of Shahrستان. Using this data, my thesis will recreate and analyze the developments of the patterns of the Shahrستان and the Ark and their relationship to the city and society of Bukhara.

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Attilio Petruccioli
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Computer analyses
of the development
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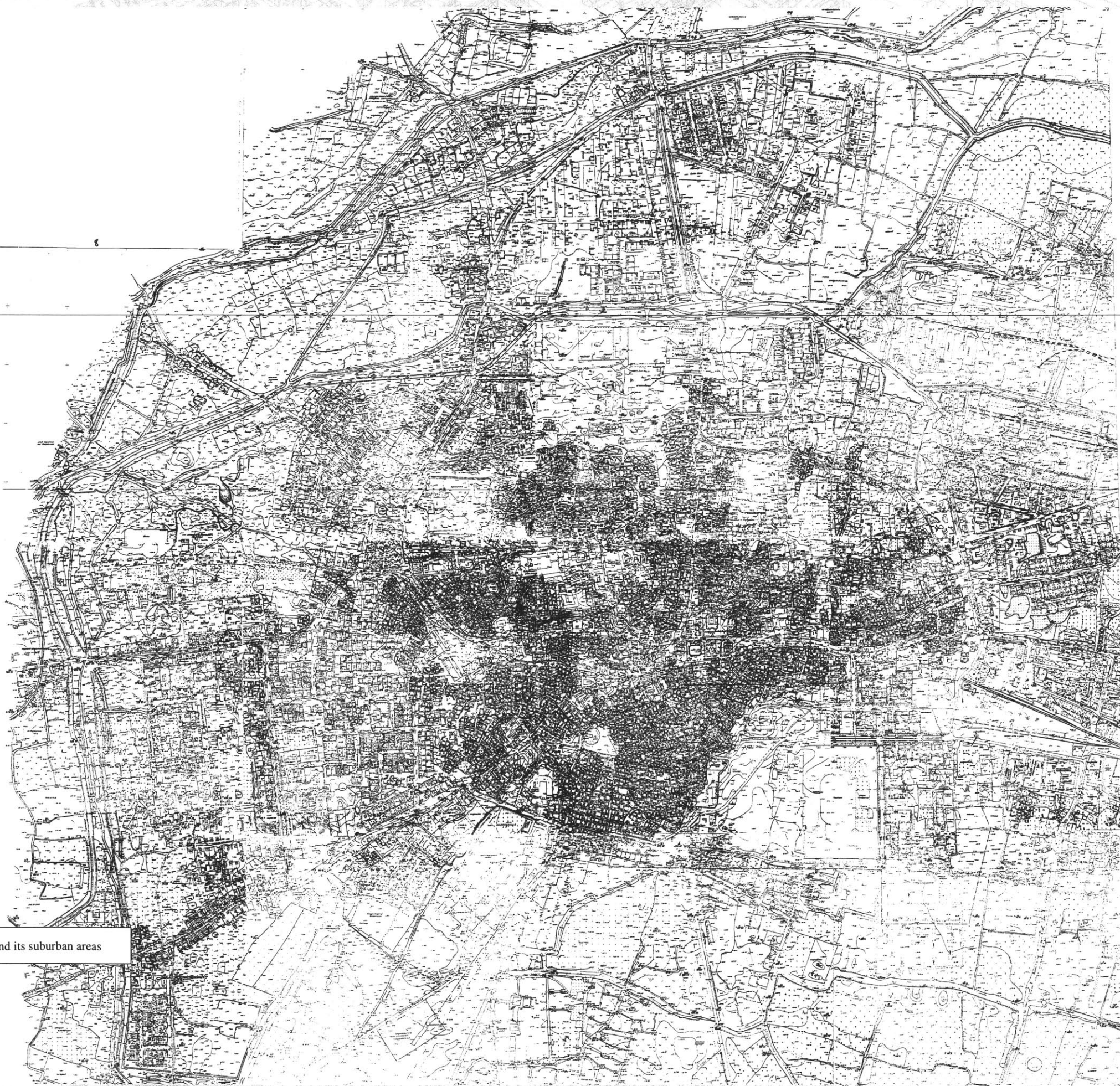
Introduction

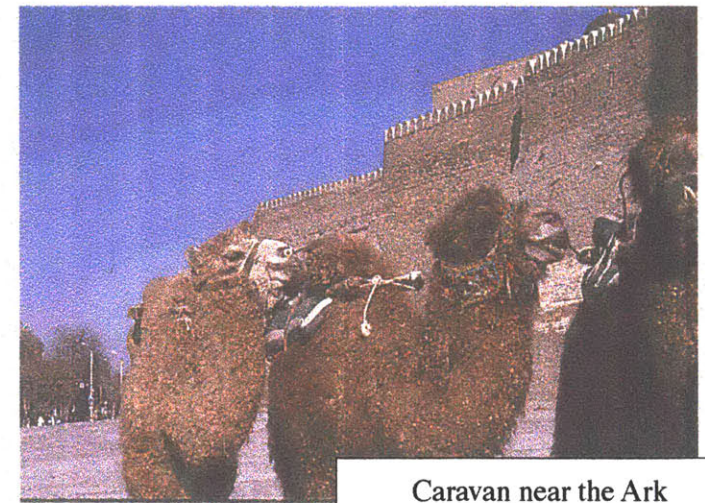
In my thesis I used new architectural excavations by Prof. E. Nekrasova to re-read and re-analyze the historical development of the Ark and Shahrستان. The Ark and Shahrستان are the oldest and the most important historical cores of the city of Bukhara. In my thesis I will study the relationship between them in the formation of the city's urban fabric. In addition to the old method of the city's study, based on old historical chronicals and the analyses of the urban fabric, my thesis will use the facts from the archeological excavations in Bukhara. However, all the previous proposals were not supported by actual archeological data. Combining all the data accumulated from my fieldwork and several surveys in Bukhara during the last two years, my thesis intends to combine the most acceptable ideas and facts into one persuasive proposal.

In my paper I will argue with two previous proposals made by the scholars from Uzbekistan. The proposals themselves represent two of the most popular and discussed theories of the city's development. Since archeological excavation is a very painful process in the living city, the research on this city was based on the visual surveys and analyses of the historical sources. However, in my thesis I will consider as acceptable as doubtful ideas of both theories and use them in my analysis of the historical formation of Bukhara to propose a new theory of the city development.

In chapter one, part four of my thesis I will introduce readers to the proposal of Prof. Notkin, who has based his theory of the city's development on the reading of the existing urban fabric. He contends that the city of Bukhara grew gradually in all directions. "Rings of the city growth" were spread almost equally around the Ark and Shahrستان. According to his proposal, a first settlement appeared at the in-

Bukhara city and its suburban areas

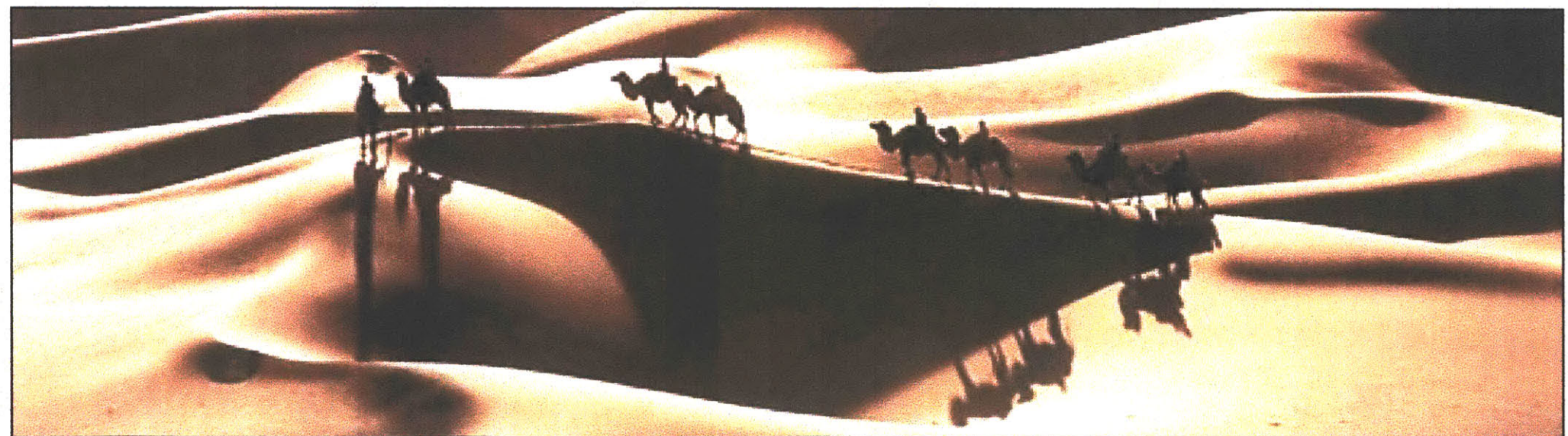


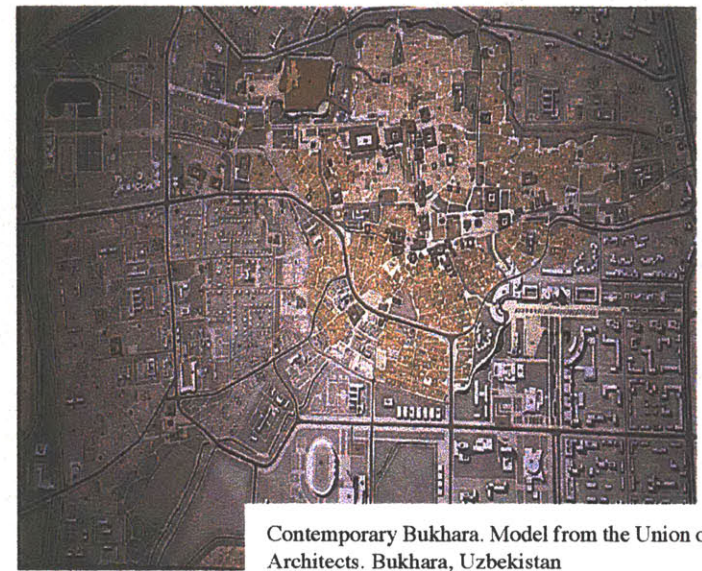


Caravan near the Ark

tersection of two Silk Routes. He claims that the Silk Routes played the main role in the development of the settlement into a large city, and that by the time of Arabic conquest the city had the area of 30-35 hectares with 7 gates. My thesis intends to prove that in fact, by the time the Silk Route became an important feature in the trade relationship between the East and the West, Bukhara was already formed as a city. The thesis in the second chapter will develop this fact to question the proposal of Prof. Notkin.

The proposal by Prof. Bolshakov has been a subject of discussion for the whole period of its existence. His propos-





Contemporary Bukhara. Model from the Union of Architects. Bukhara, Uzbekistan

al is based on the creation of the Bukhara city according to the Roman rule of a city grid that was subsequently deformed over a period of two thousand years. However, taking into account traditional methods of construction in Central Asia, this proposal seems to be doubtful. The material for the buildings, which have all the features of flexible and organic form, was clay. Obviously, it was not necessary and would have been

extremely difficult to make such elaborate grid. My thesis proposes the process and the possibility of gradual growth of the first settlements as the second important factor in the city's development.

Based upon the recent archeological excavations made by Prof. Nekrasova in Bukhara, my thesis will analyze the existing city landscape in order to reproduce a better ani-

mation of the growth of Bukhara. Since the development of a city depends greatly upon the social life of its inhabitants, this issue will be taken into account in my theory of the development of Bukhara.

In the last chapter, my thesis will use the existing data to go back to the 5th. c. A.D. and recreate the urban pattern of Shahrستان and the Ark and their relationship to the city. My thesis

will analyze the development of the Ark and Shahrستان in a smaller scale. Using architectural excavations within the Shahrستان, my thesis will interpret the words of Narshahi¹, a writer of the 10 c. A.D., who said "Shahrستان was divided into four parts and every part was organized as a village" in a new way. Since this description of Shahrستان was a key issue, scientists have frequently interpreted this sentence in the relation to the two roads which crossed the Shahrستان from the North to the South and from the West to the East. Recent archeological excavations have revealed several patterns of the old wall in different areas of Shahrستان. Using this data, my thesis will recreate and analyze the developments of the patterns of the Shahrستان and the Ark and their relationship to the suburban areas of the city of Bukhara.

With a three-dimensional model of Shahrستان and Ark that shows their relationship, my thesis will illustrate how their relationship influenced the development of Bukhara.

Assembling together the new archeological data, I will examine the two previous proposals to reanalyze and create a new theory of the city's development and show the relationship of the Ark and Shahrستان to the city itself.

1. Narshahi was born in 286 H / 899 A.D.

Historical background:

Bukhara, according to several legends and stories, was founded in the 5th century B.C. in the lower part of the Zeravshan river on the place of the intersection of two major Silk Routes that connected China, India, the Middle East, Syria, the North and the South of Eurasia land in the 10th century. At different stages of its development, the city had varying purposes as a center of the Bukhara valley, but generally it always remained a trade city. Several times the city was destroyed by enemies but was rebuilt again in the same place with the same name. Bukhara is also an important city in the history of Islam for its urban and architectural value. There are about 300 monuments in contemporary Bukhara which were built during the long period of the historical development of the city. Most of them are known across the world as monumental pearls of Islamic architecture.

The Bukhara oasis¹ occupies a part of the ancient delta of the Zeravshan river. The locality has a dry, sharply continental climate, making agriculture without artificial ir-

1. " Bukhara" Shishkin, 1863, p. 117, 121, 138, 141.

rigation impossible.

The oasis is surrounded by deserts and dry steppes on all sides. To the north, there is the sandy desert Ichkillikum -- the outskirts of Kizilkum. The somewhat elevated steppe Chuli-Malik, filled with rare plant life, adjoins the oasis from the east. From the west, the oasis is limited by the Kizilkum desert. Only from the east does the Bukhara oasis connect with the Kermine oasis through a narrow strip along Zerashan through Hazara area. To the south-west, the small area of Karakul² is an extension of Bukhara oasis.

Bukhara, situated in the southern part of the oasis, is one of the oldest cities in Central Asia. Its uniqueness lies in the fact that in the course of more than 2000 years the city was located on the same spot. Bukhara was the capital of Buhar-hudats (6 -7 c. A.D.), Samanids (second half of 9 - 10 c. A.D.), rulers from the Shaibanid dynasty (16 c. A.D.), Ashtarhanids (17-18 c. A.D.), and Mangits (18 - beg. of 20 c. A.D.). Throughout many centuries, Bukhara played a role as a significant center of Maverannahr for crafts and trade, as well as for culture and administration. Caravan routes that connected the countries of Near East and South East Asia passed through Bukhara.

The first description about Central Asia appeared in Chinese sources telling about the lands of Central Asia. About 2nd c. B.C. a Chinese ambassador called Ch'ang-Ch'ien visited Central Asia and found that a people called the Yueh'ih in Chinese texts had already occupied much of the land by the banks of the Oxus River. Later the Yuch-Chi'en conquered lands to the south of the Oxus, and one of their clans established a kingdom known in history as the Kushan Empire.

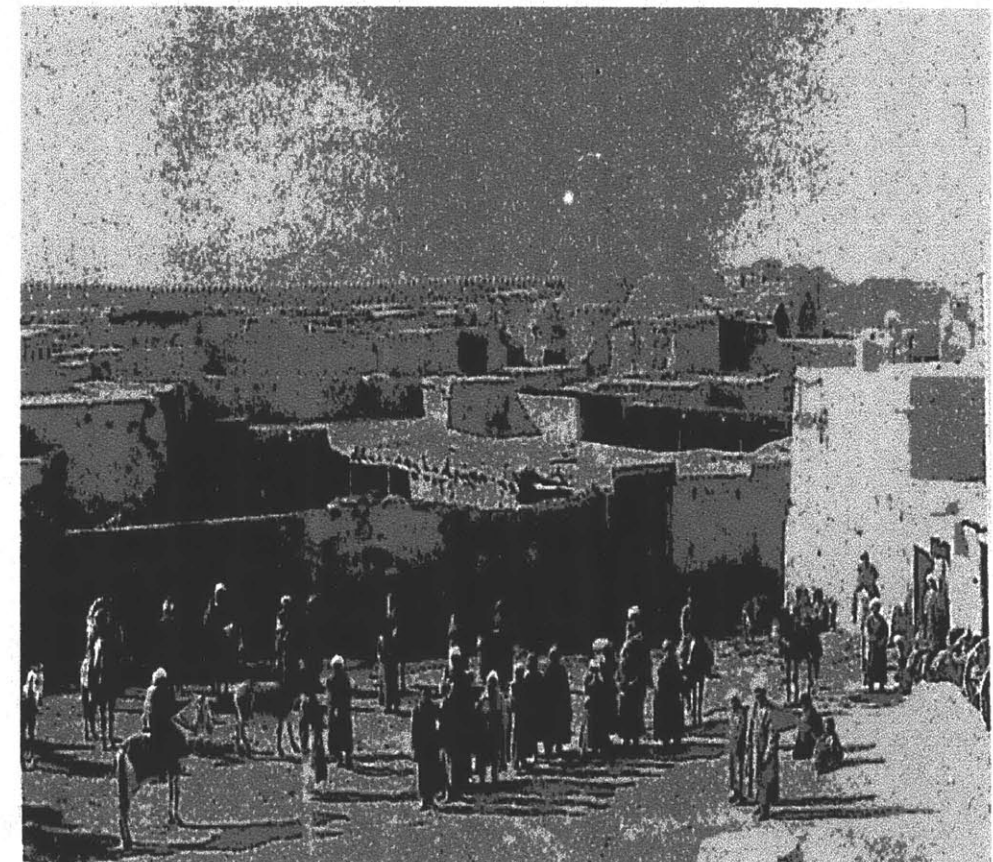
From the 1st to the 4th c. A.D. the Kushan Empire was the dominant cultural as well as political power in Afghanistan and Central Asia. Under the Kushans, Buddhism spread into Central Asia and to China. Recently the inscriptions in the language of the Kushans have been found and partially deciphered (from Arkh Kotal in Afghanistan and elsewhere).

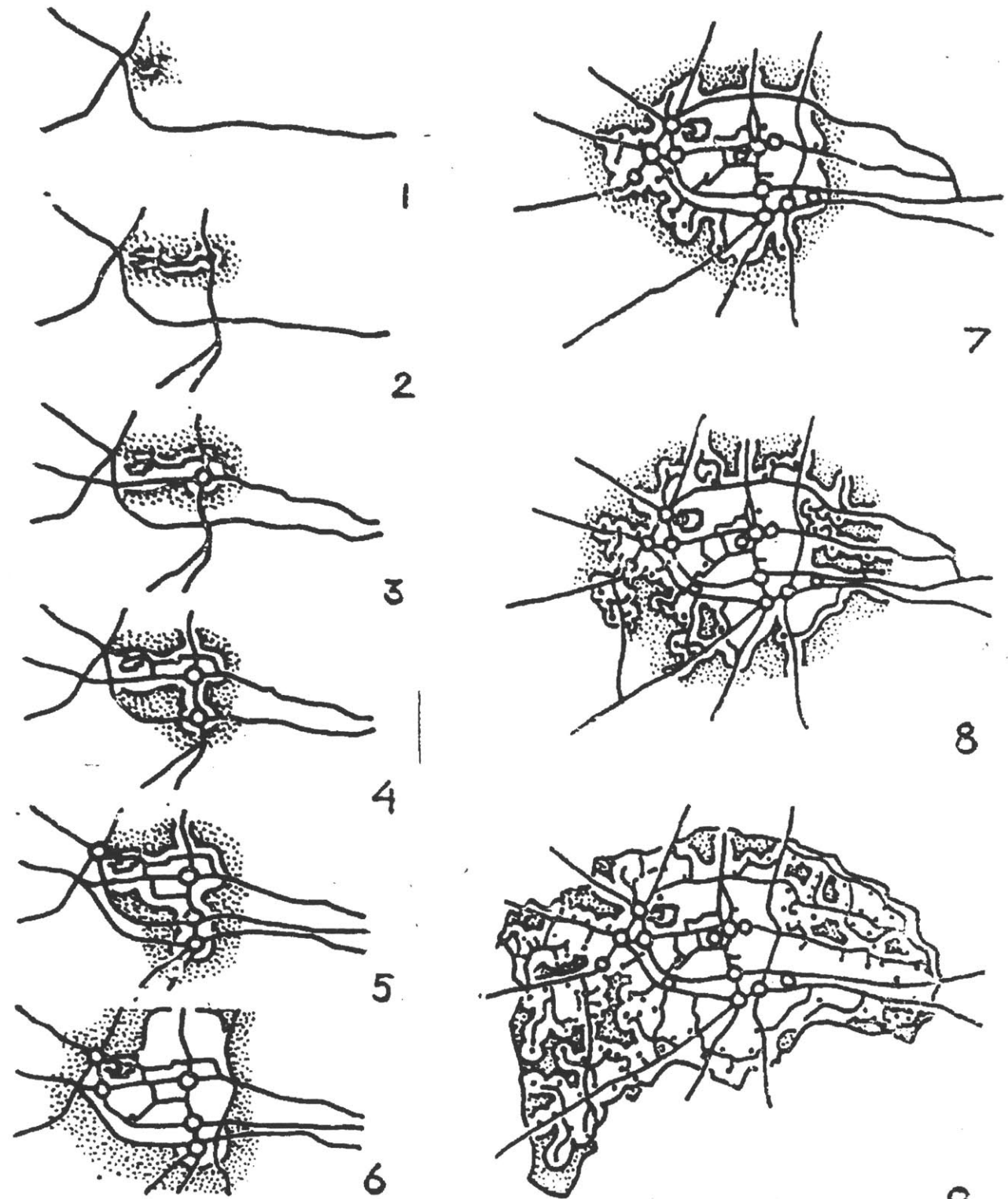
The first settlement appeared on the place where the Ark is situated now. The Citadel (Ark, fortress), about 15-16 m high, dominates the city. This irregular quadrangle has a cut-off south-east corner, while its western side serves as entrance. The area of the Ark within its walls is about 3 hectares².

The cultural layer of Bukhara, underlying currently existing buildings, is a massive "layer cake", up to 20 m thick, the composition of which is complex and non-uniform. It is tremendously difficult to conduct large-scale archeological excavations on the territory of a "living city" --consequently researchers often have to limit themselves to placing prospect-holes and cuts. Well-known obstacles are encountered when one attempts to determine the territory of the city in different periods of its many-century existence, since during each successive construction, previous buildings and plans were demolished, sometimes in their entirety. One of the significant problems is subterranean waters which cover up layers of the 10 c. A.D. in certain parts of the city's territory. All this complicates the research of Bukhara, particularly its early history.

2. The calculation of the modern area of Ark was conducted by Architect V.M. Filimonov based on topographical and aerial photography in 1930

Proposal of the city development by Notkin





Bukhara developmnt.
Prof. Notkin.

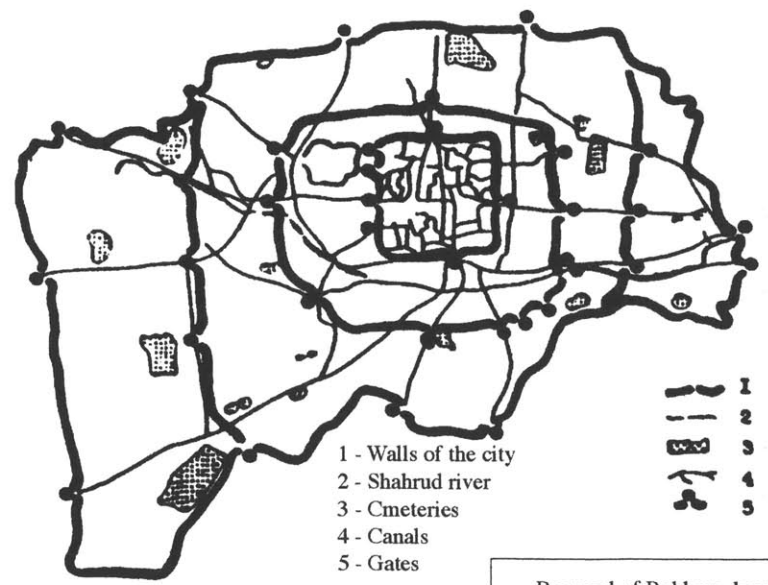
Proposal of the city development by Notkin

According to the professor Notkin, Bukhara's growth was a gradual development of the urban fabric in all directions. This was the most acceptable theory in the last few years. I would agree with his proposal if I did not have in my hands new archeological excavations. His proposal includes the appearance of the first settlement of Bukhara at the intersection of two roads. However, from the proposal it is not clear which roads were the main issue in the formation of Bukhara. Therefore, the proposal of professor Notkin is vague in terms of theoretical facts. Does he give the Silk Routes as the roads on the intersection of which the city of Bukhara appeared? In the sources of Narshahi (10th. c. A.D.) we can read that there was a large swamp on the place where Bukhara is located now. Obviously, there can't be any intersection of two roads in a place like this.

As the basic factor for this proposal Prof. Notkin

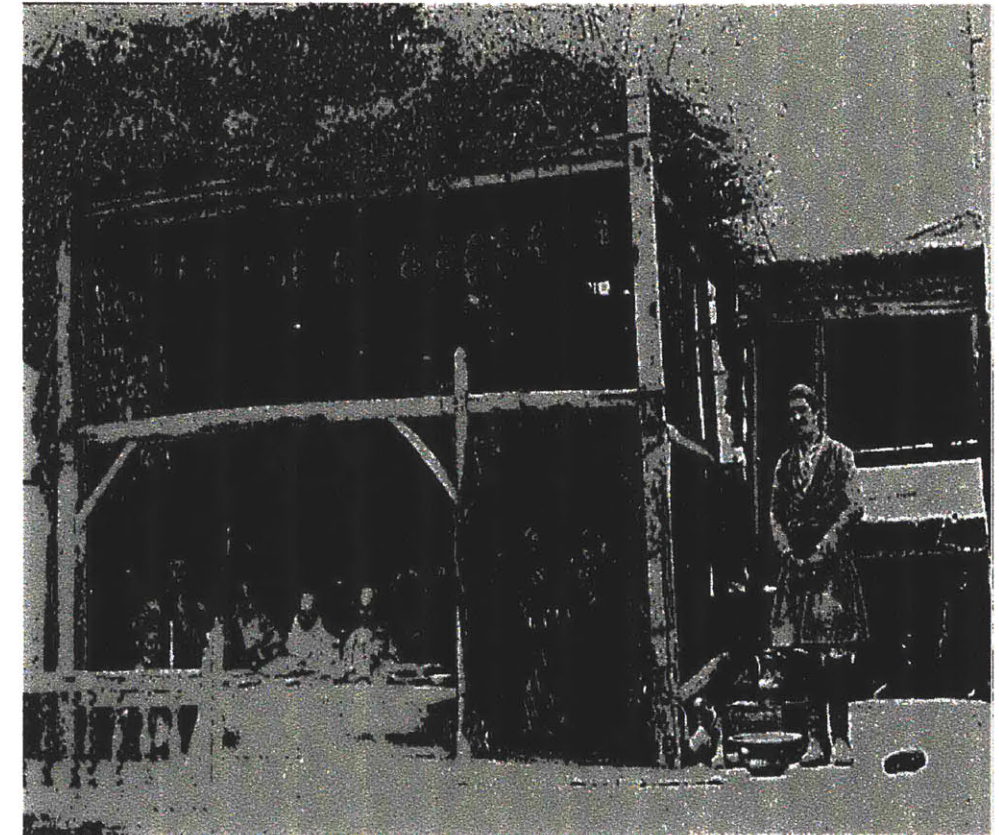
uses the city's urban fabrics , stepped water wells and the roads. I agree that the analysis of the urban structure of the city can give certain results and may be very useful, but they must be supported by facts. His arguments about the development of the urban fabric are based on the theory of gradual growth of the city by itself. Stepped water wells play a very important role in his argument. Since they are the most important parts of the city's structure, Prof. Notkin gives them the first preference in his hypothesis of the city's development. According to his theory of Bukhara's development, all the houses were congregated around the water wells and along the streets.

In his proposal Prof. Notkin claims that Bukhara grew gradually in all directions. My proposal will make one major correction in his proposal. Using archeological data I will prove that the city of Bukhara was the largest city of that region in the 10th century.

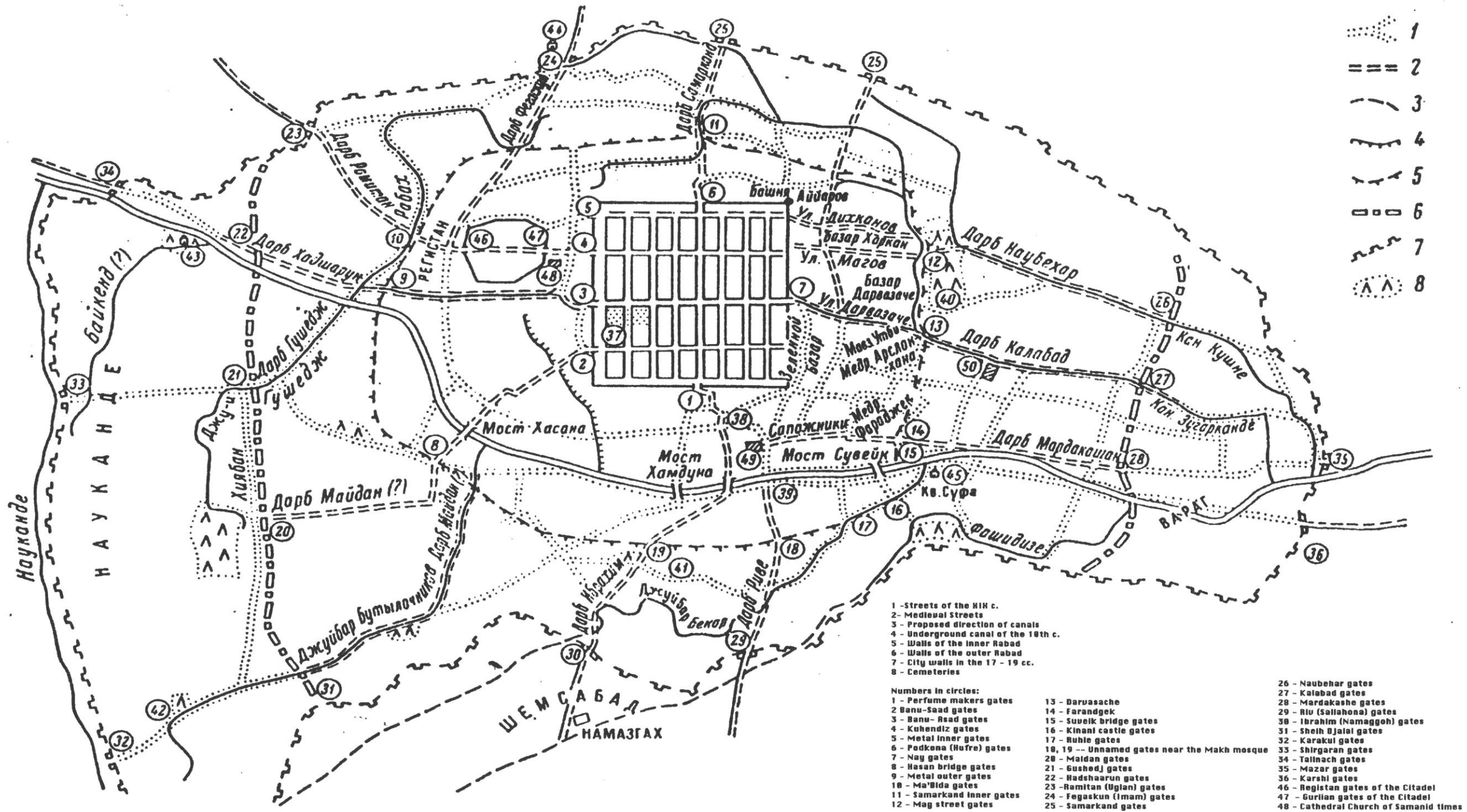


Proposal of Bukhara development by Notkin

Proposal of the city development by Bolshakov



Proposal of the Shahrستان plan by Bolshakov

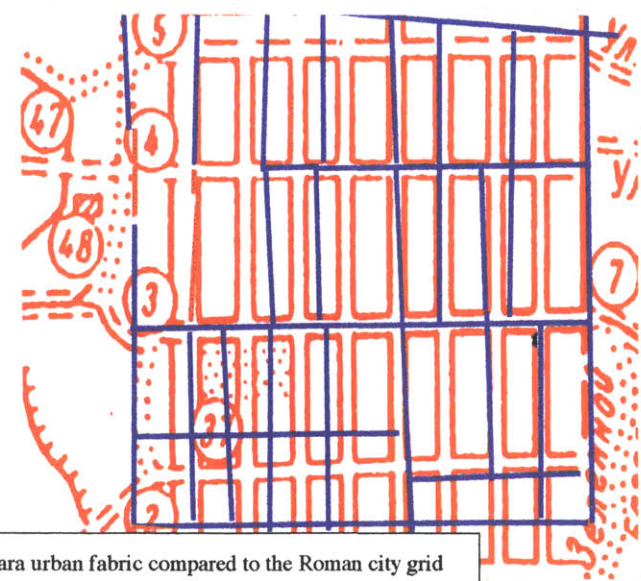
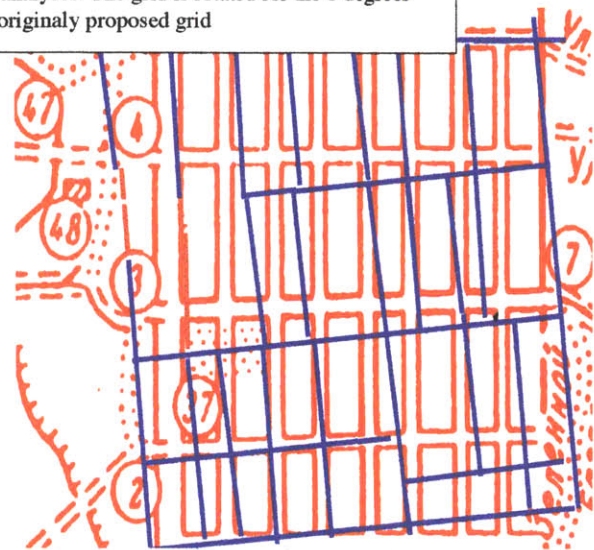


Proposal of the city development by Bol'shakov

Bolshakov's theory has been discussed for a long time since it was developed by the author in 1972. The development of Bukhara city according to the Roman rules of a city grid with a precise, so called "Roman" urban fabric which was subsequently deformed over a period of two thousand years was the main issue of the proposal.

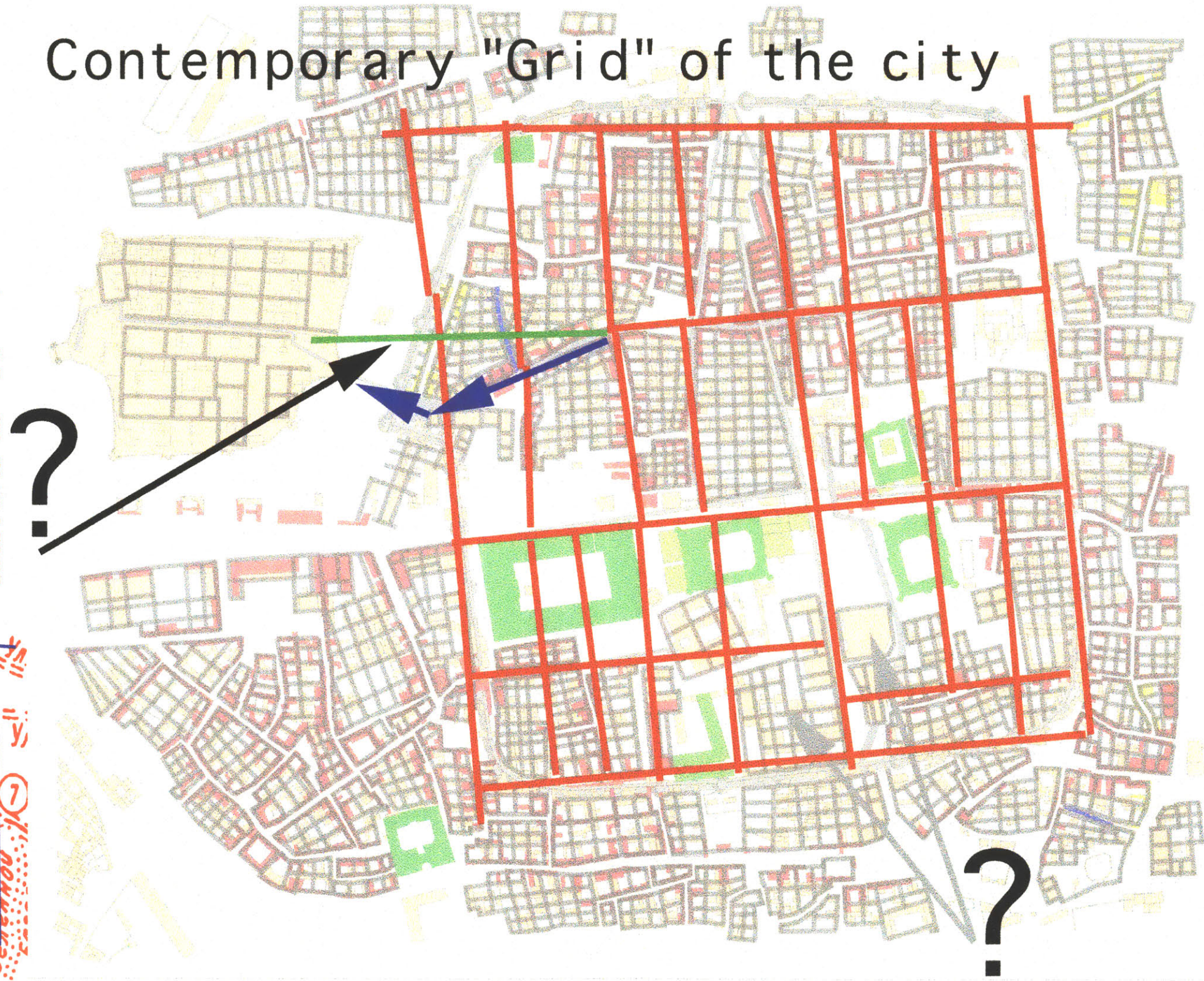
Analyzing the contemporary condition of the

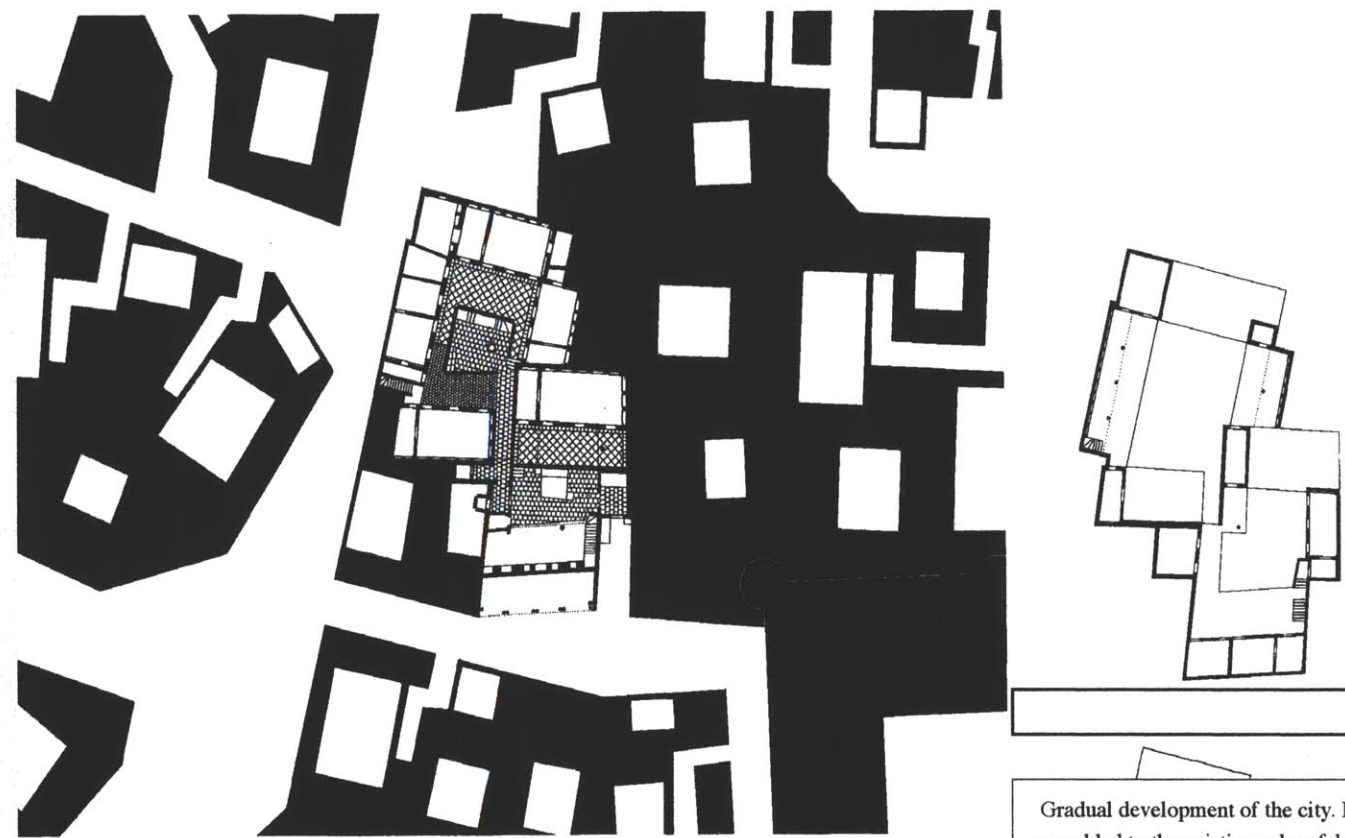
City grid analyses. The grid is rotated for the 6 degrees from the originally proposed grid



Bukhara urban fabric compared to the Roman city grid

Contemporary "Grid" of the city

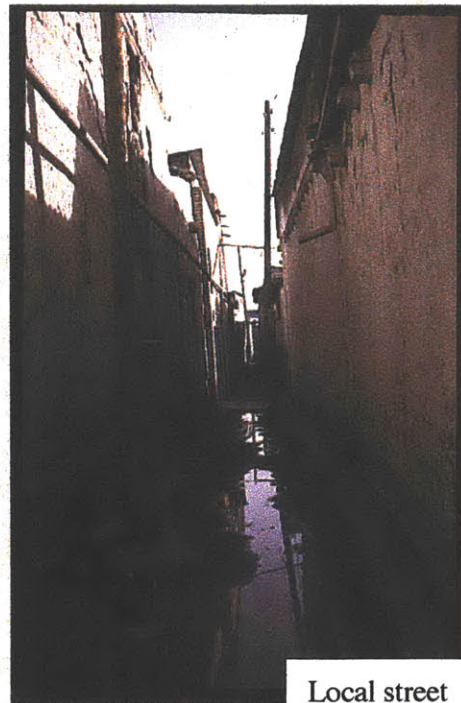




Gradual development of the city. Houses are added to the existing urban fabric



Contemporary Shahrستان



Local street



Suburban Shahrستان

Shahrستان layout, Prof. Bolshakov concluded that the dimensions of the existing city blocks more or less equalled to the Roman dimensions of the city blocks.

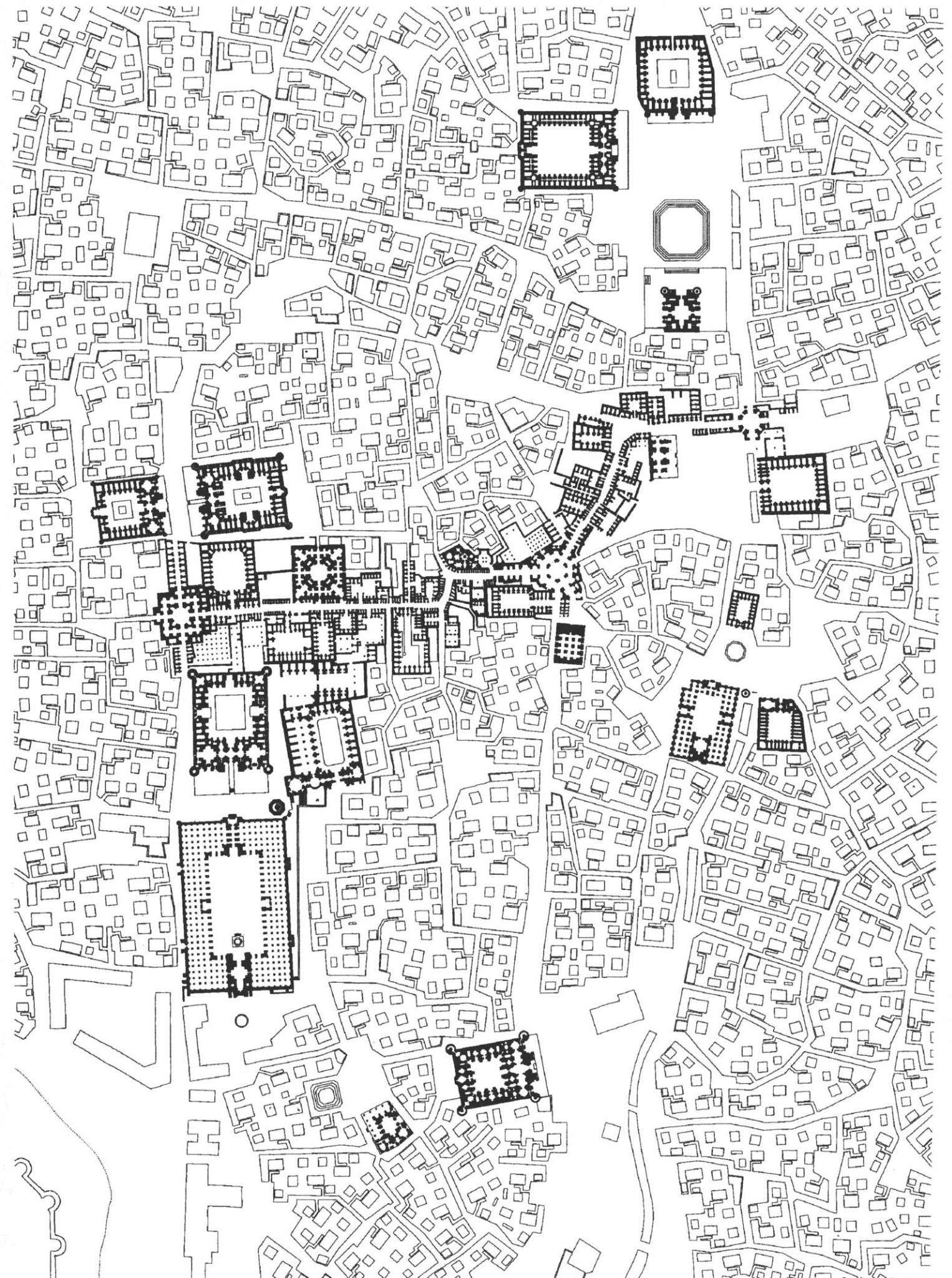
Trying to understand the full meaning of his idea, I analyzed the existing fabric pattern of the city within the Shahrستان area. As a result of my analyses I came to the conclusion that the city grid matches in some points of the urban fabric but not so much that we can hypothesize that the Roman city grid was deformed throughout the 2,000 years. Moreover, the way the buildings were constructed contradicts with Bolshakov's proposal. The main material from which all the buildings were constructed was "pahsa" -- a mixture of clay and reed. Sometimes wood was used to make a carcass of a wall, and the space between wooden structure was filled with pahsa. This

type of building construction did not require a perfect grid. Moreover, it was quite difficult to organize this kind of grid in the gradually growing city. The fact is that Shahrستان gradually grew by adding new houses to the existing urban fabric. All the paths that crossed the city in different directions played the main role in the formation of the new city.

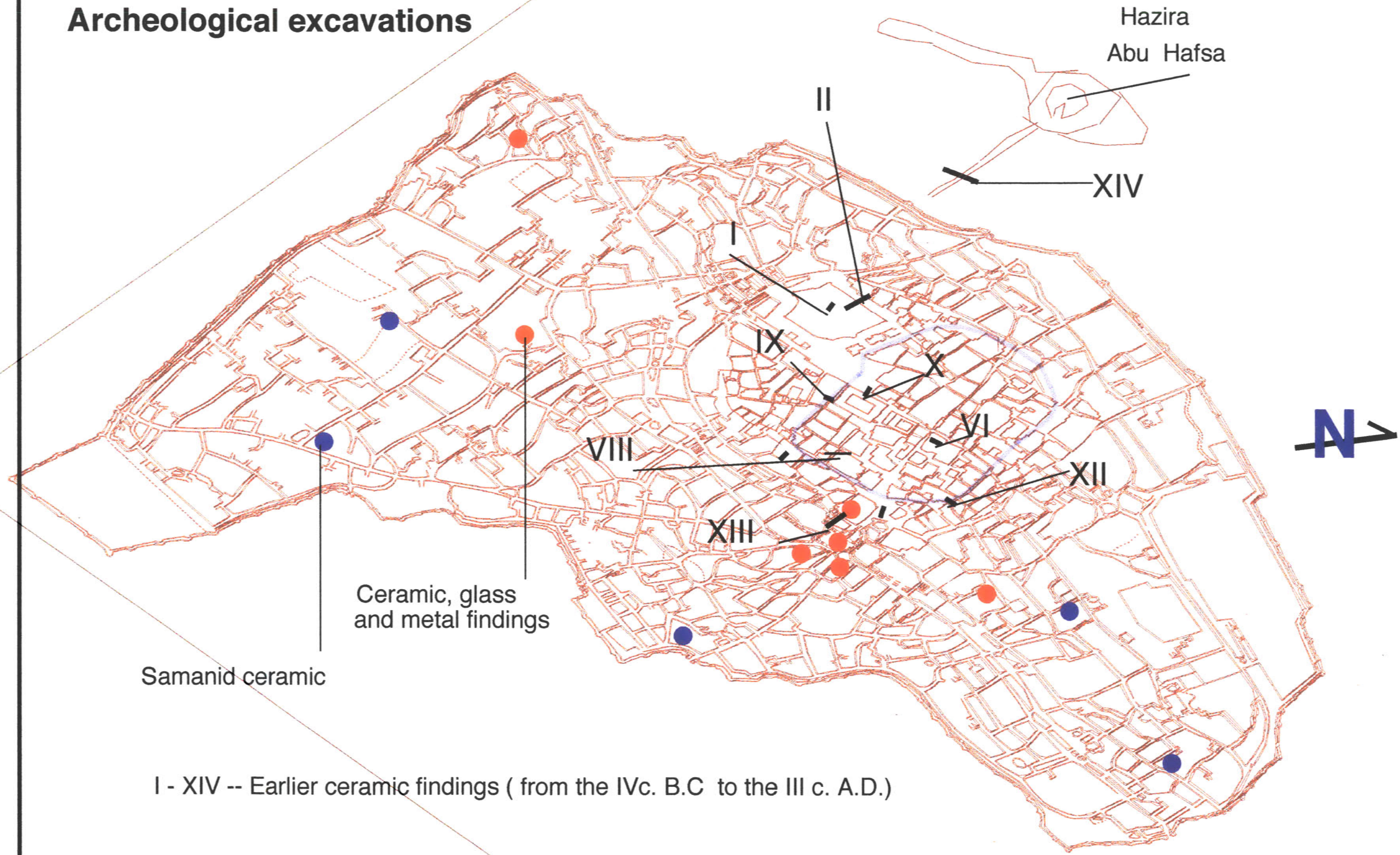
However, I agree with Bol'shakov's idea about the topographical condition of Early Islamic Bukhara in his study of Bukhara in the 10th c. A.D. In his book *Srednevekovyi goroda Srednei Azii* (Medieval cities of the Central Asia) he claims that Bukhara in the 10th c. A.D. was much bigger because of the city's status in the Samanid Empire. Bukhara became a capital of the Samanid Empire and it was influenced by the Silk Route, which brought a wealth to the city and the region.

Chapter II

Archeological data



Archeological excavations



Hazira
Abu Hafsa

XIV

II

I

IX

X

XI

XII

VIII

XIII

Ceramic, glass
and metal findings

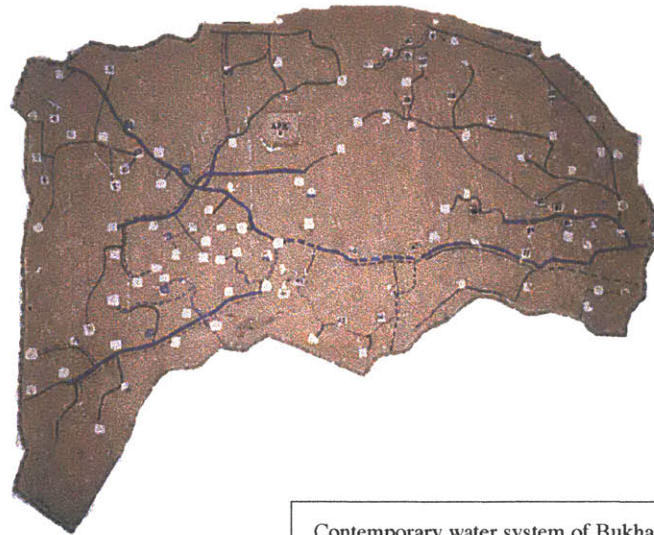
Samanid ceramic



I - XIV -- Earlier ceramic findings (from the IVc. B.C to the III c. A.D.)

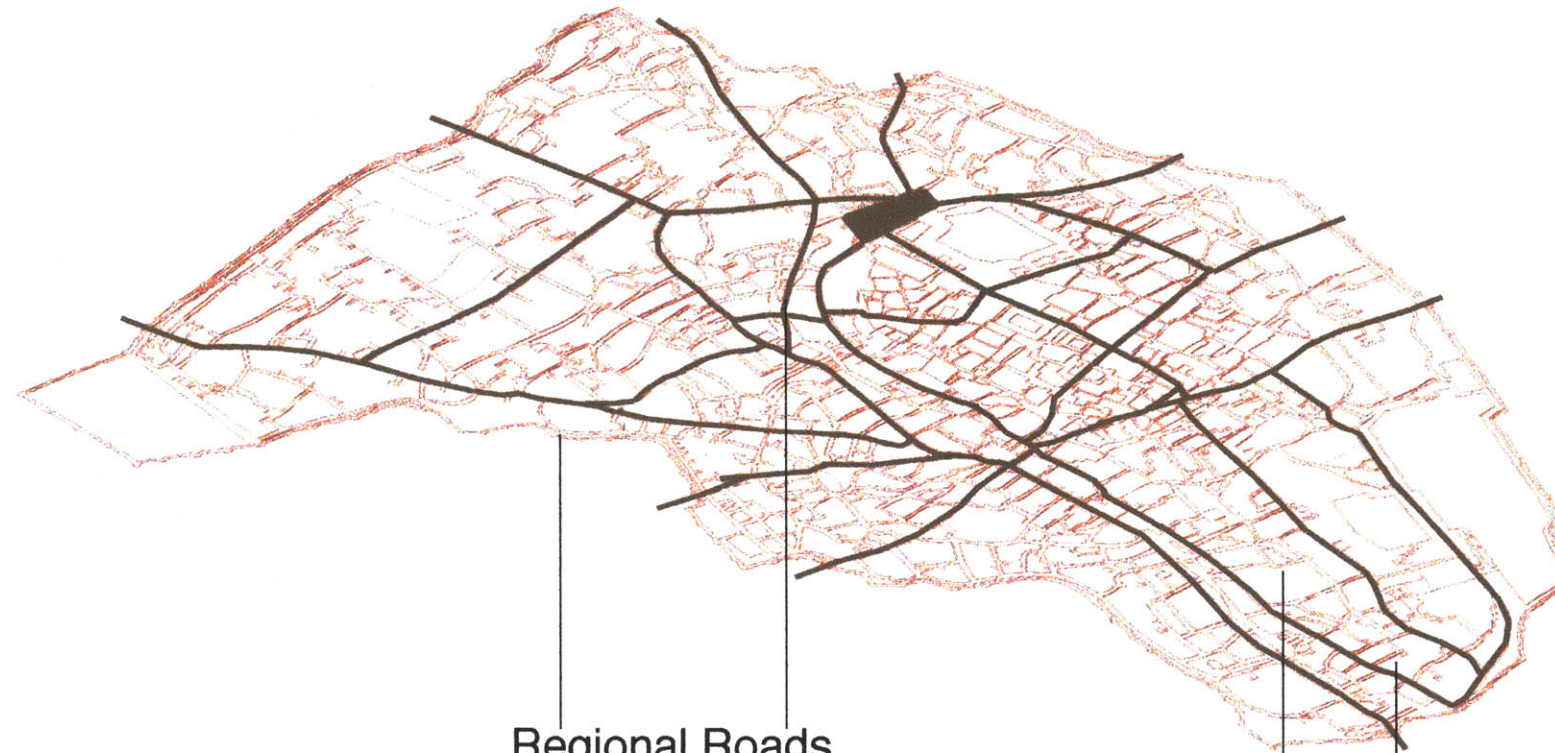
Contemporary
condition of
Bukhara





Contemporary water system of Bukhara.
Union of Architects, Bukhara, Uzbekistan

Roads System of the City

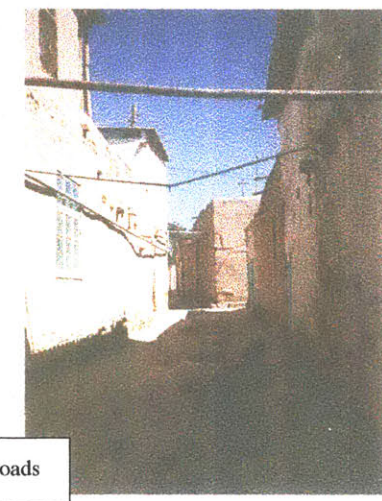
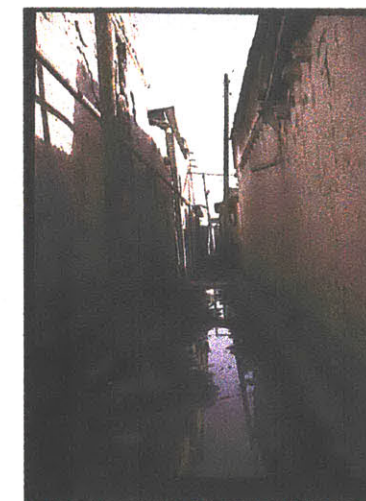
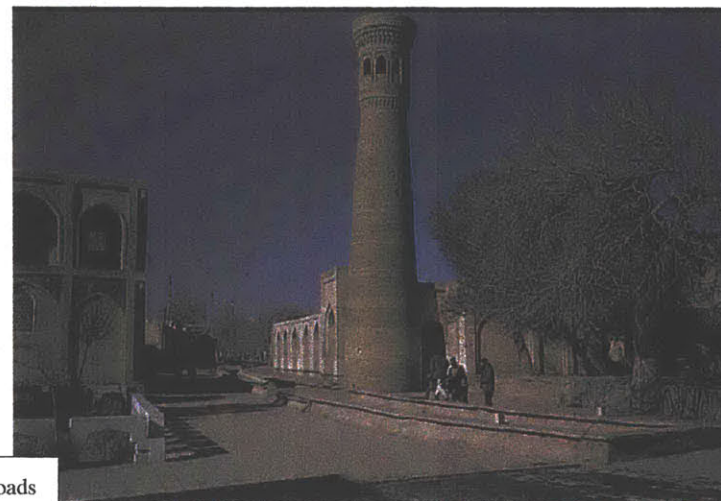


Regional Roads

Local Roads

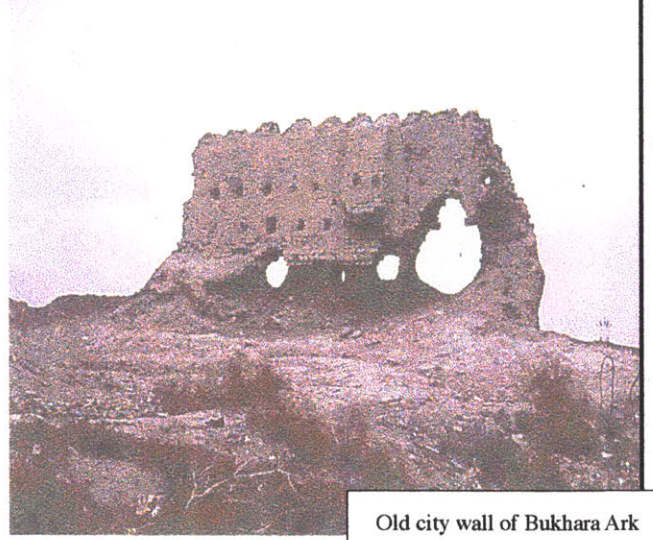
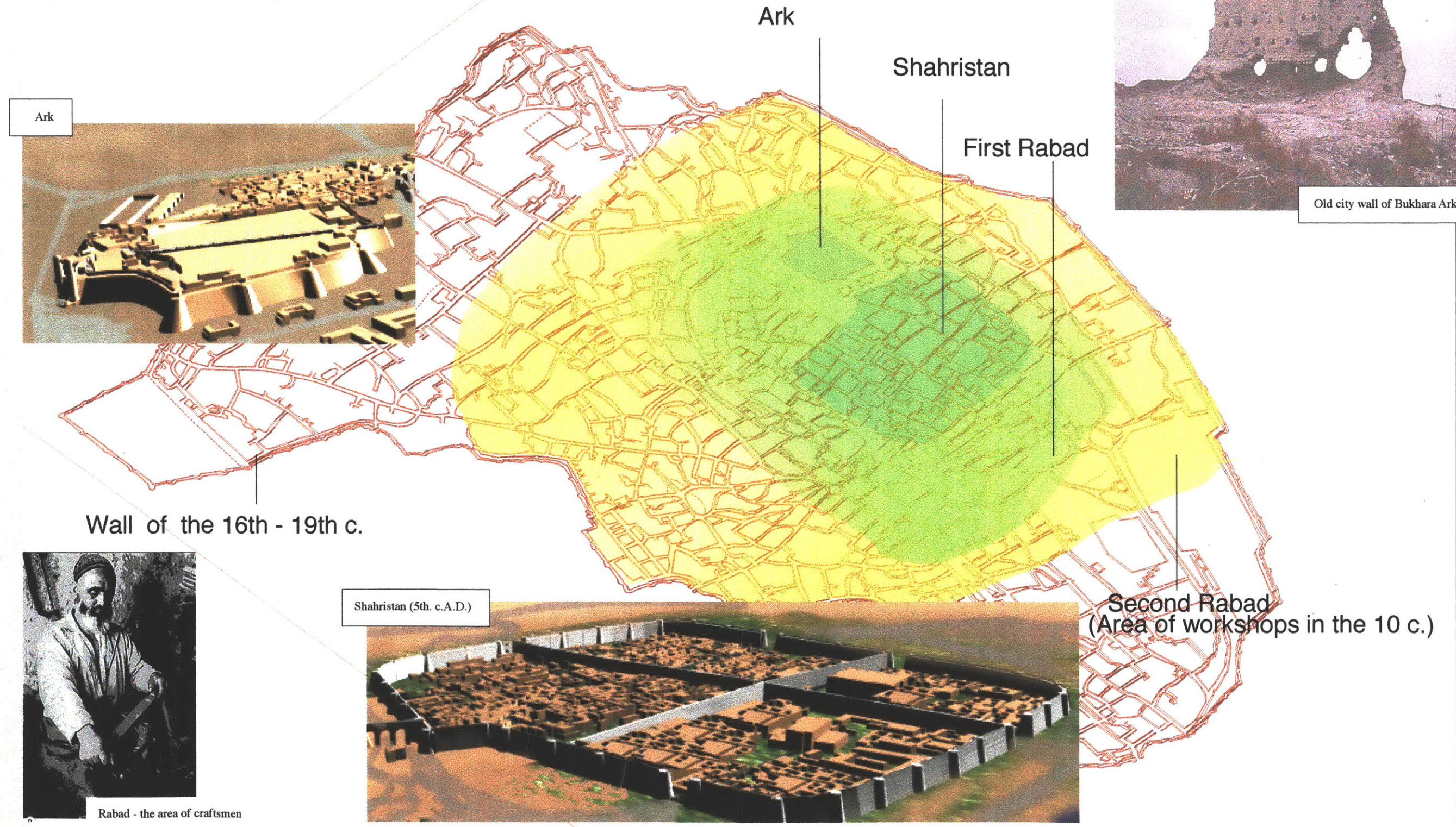


Regional roads

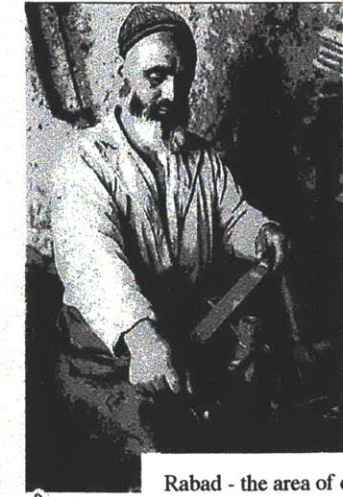
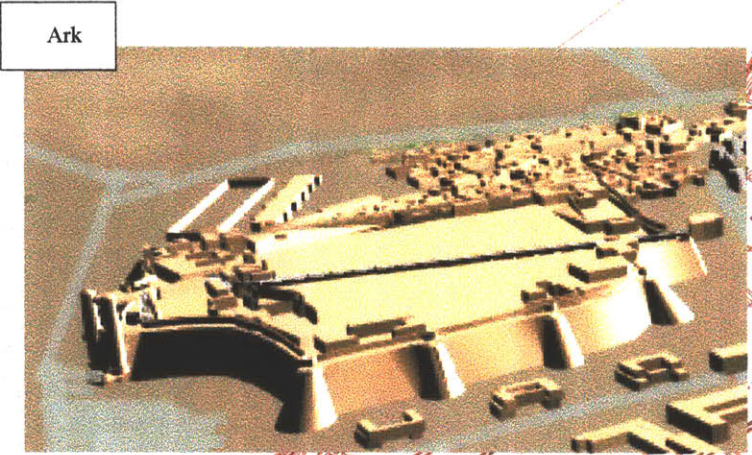


Local roads

Layout of the City



Old city wall of Bukhara Ark

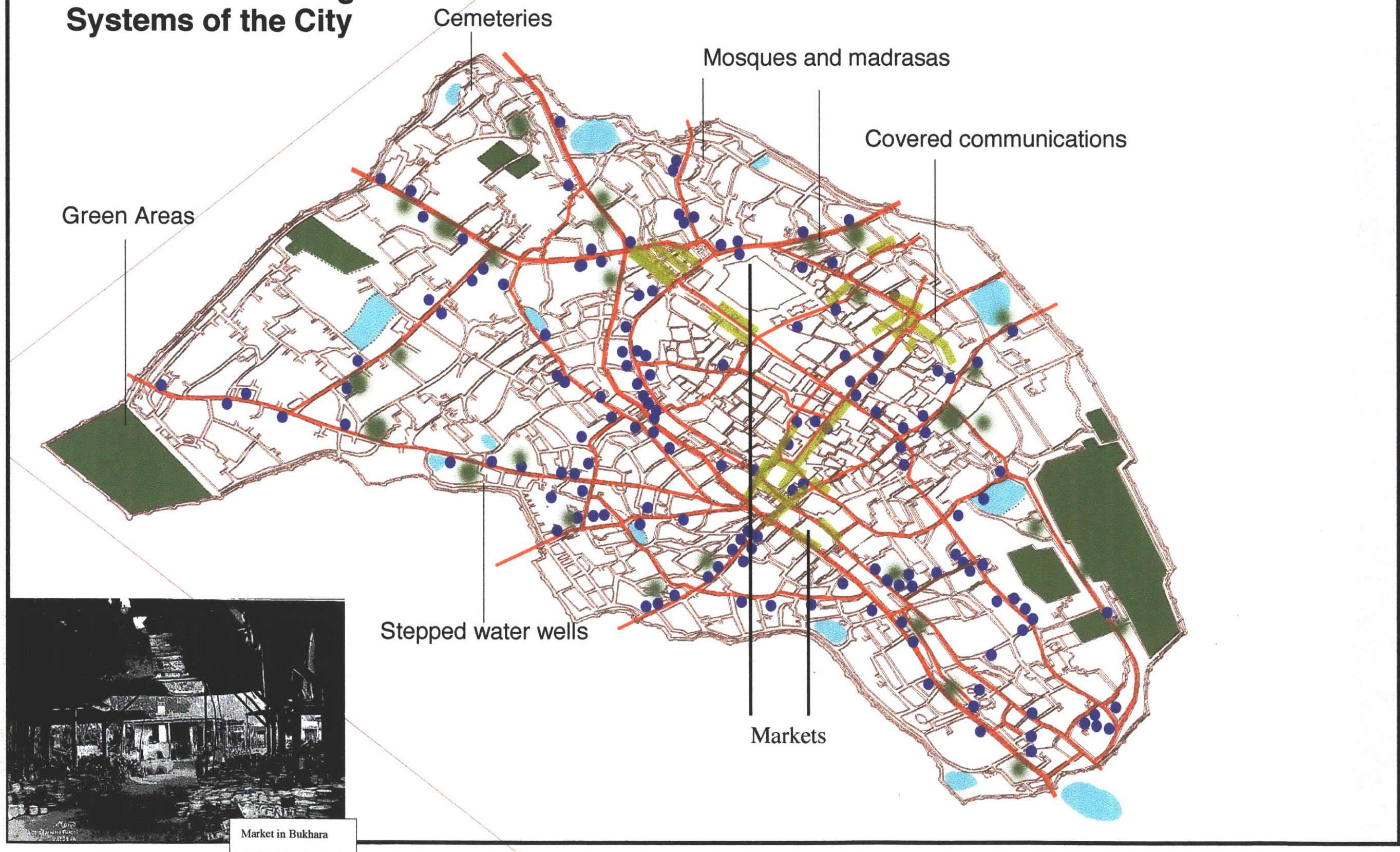


Rabad - the area of craftsmen



Shahrستان (5th. c.A.D.)

Cultural and Ecological Systems of the City



Chapter II

Archeological Data

Early history of Bukhara

This part of my thesis is based on the published

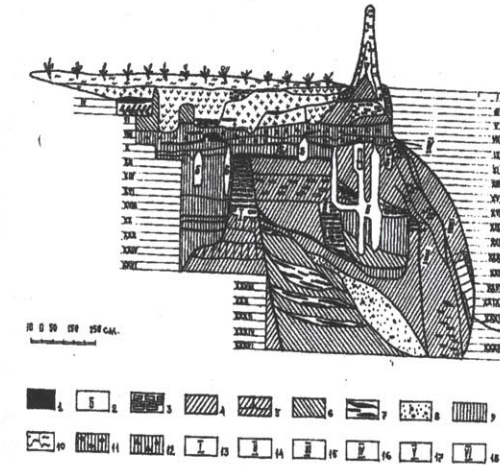
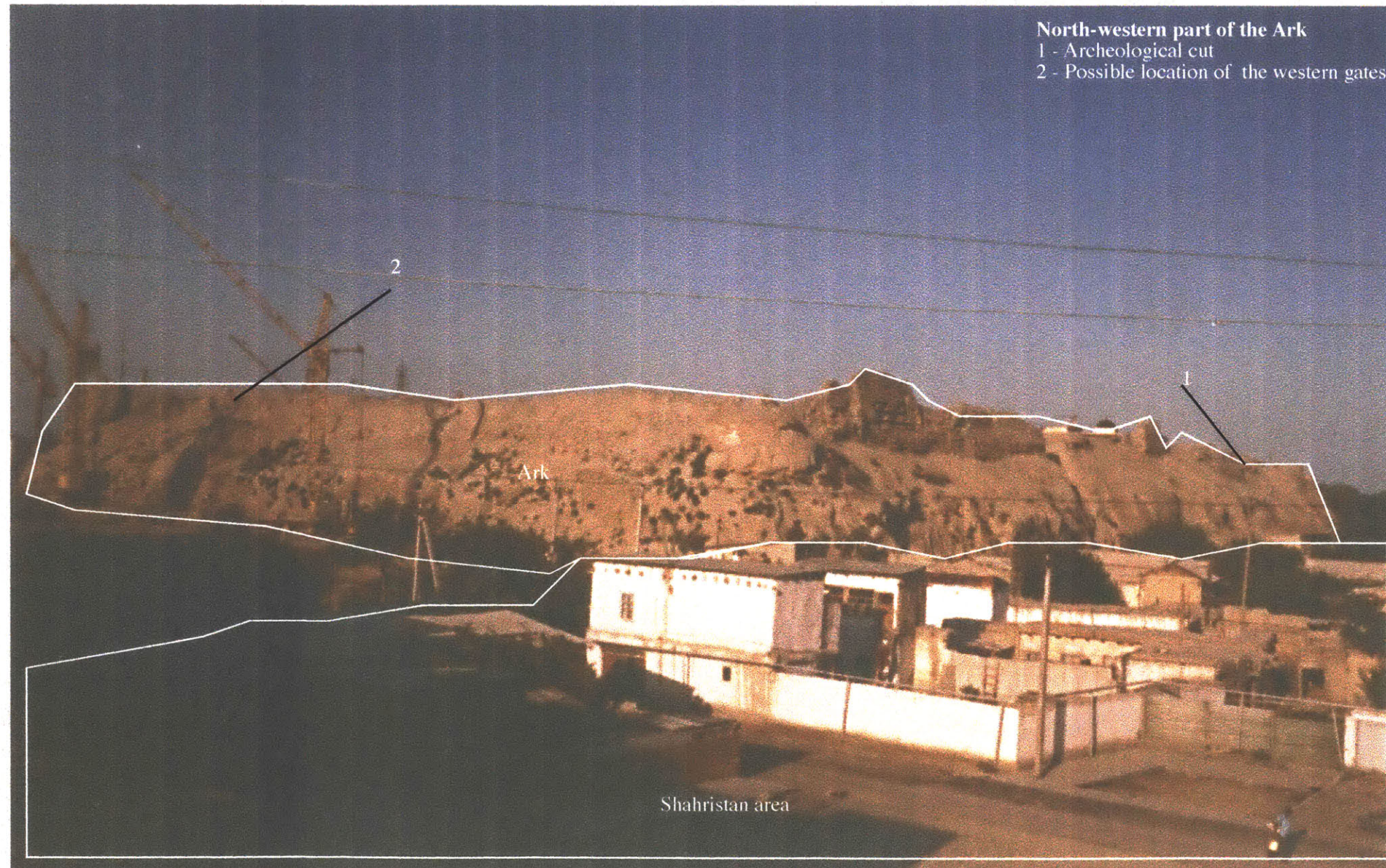
materials of the Institute of the Archaeology of Uzbekistan, which conducted research in Bukhara in the 1970 and 1980s, and on data I obtained while working with archeologists from the Institute.

The historical tradition, found in the writings of Bukhara's historian Muhammad Narshahi, places the creation of Bukhara as far back as the time of the myth-

ical kings Siyavusha and Afrasiaba, were 3000 years ago.

On Bukhara's territory 14 sites with early ceramics were explored by the Prof. Nekrasova, encompassing a period from the end of the 4th c. B.C. to the 3rd - 4th c. A. D. This area is about 60 hectares.

As research has demonstrated, a geographical



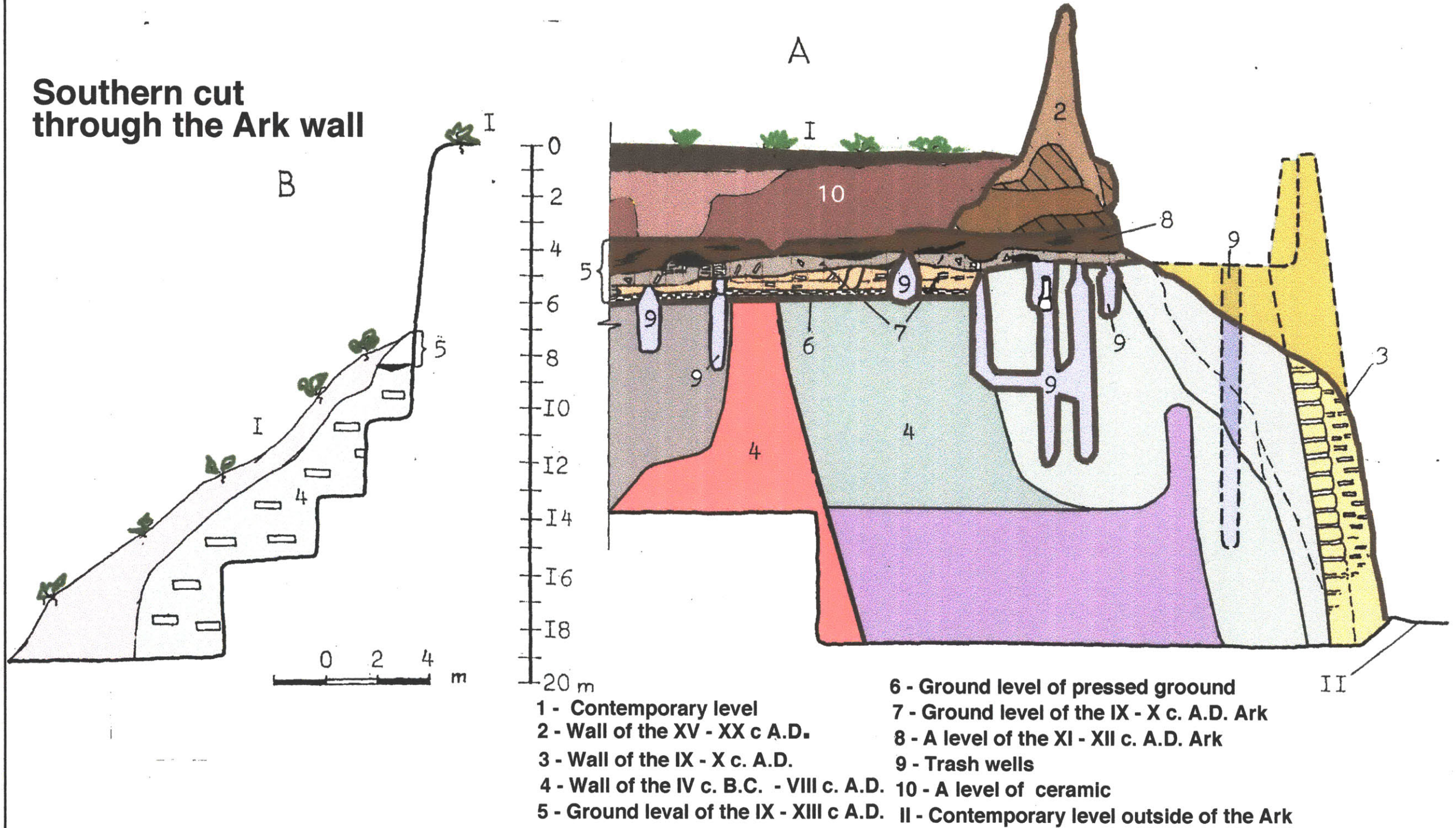
factor played the main role in the history of Bukhara formation. During spring floods, one of the principal channels of the Zaravshan river (later the Shahrud) had periodically laid new waterbeds for itself. As a consequence, man-made buildings were washed away. The stream carried enormous quantities of silt and sand. Retreating, the river returned to its old channel. Small lakes appeared in the flooded areas, which eventually were transformed into swamps. Life returned to the sandy-clay elevations, held together by plants, and new buildings were constructed.

On one of these elevations, the Ark was built. By the end of the 4-3 c. B. C., it had the area of 2-2.5 hectares and was surrounded by a wall. Its known height is 9 m. The outer edge descends abruptly, while its inner edge forms a small platform, about three meters in width. The maximum thickness of the wall is 7.5 m., the minimum is 2.8 m. The building material is "pahsa"¹ and blocks made from it. During one of the biggest reconstructions, the wall was heightened by 3,5 m. This repair was conducted hurriedly, from damp

1. Clay mixed with reed.

Proposed reconstruction of the Ark wall

Southern cut through the Ark wall



bricks. Four cultural layers adjoin the wall at the bottom. They were formed as a result of periodic clean-ups of rooms on a territory of the fortress. They are composed of layers of ashes, chalk, animal bones, metallic tools and household ceramics. The shape and composition of the goblets, glasses and some bowls present are characteristic of the Hellenic period ceramics, typical for that time in certain regions of Central Asia. They are distinguished by the density, their small pores, and a covering of red *angob*¹ on the outside, with solid polish on top.

In a deep prospect-hole on the territory of the Ark, the researchers from the Institute of Archeology have discovered the remains of the platform of some monumental building, possibly a palace. However, I think that these are the remains of a defensive wall of the first citadel. On the rest of the territory of the city, early ceramics can be encountered in the following situations:

1. In the cultural levels mixed with layers of sand deposits (I, IV, VII, XI, XII).
2. In the cultural layers connected with architectural remains and underlying those remains (VIII).
3. Early ceramics redeposited in the later cultural layers (V, XIII).
4. In deposited sandy-clay layers (VII, XI).
5. Inside the walls of VI-VII centuries, where they got mixed with the cultural layer, examined nearby (I, III, IX, X, XI, XIV).

Based on this data, I believe that the Ark, in its early period, was a small, well-fortified settlement of a town type. Its wide surroundings were not enclosed by a wall, but was settled only sporadically, depending on the flooding of the Zaravshan. Later on, with the creation of irrigation sys-

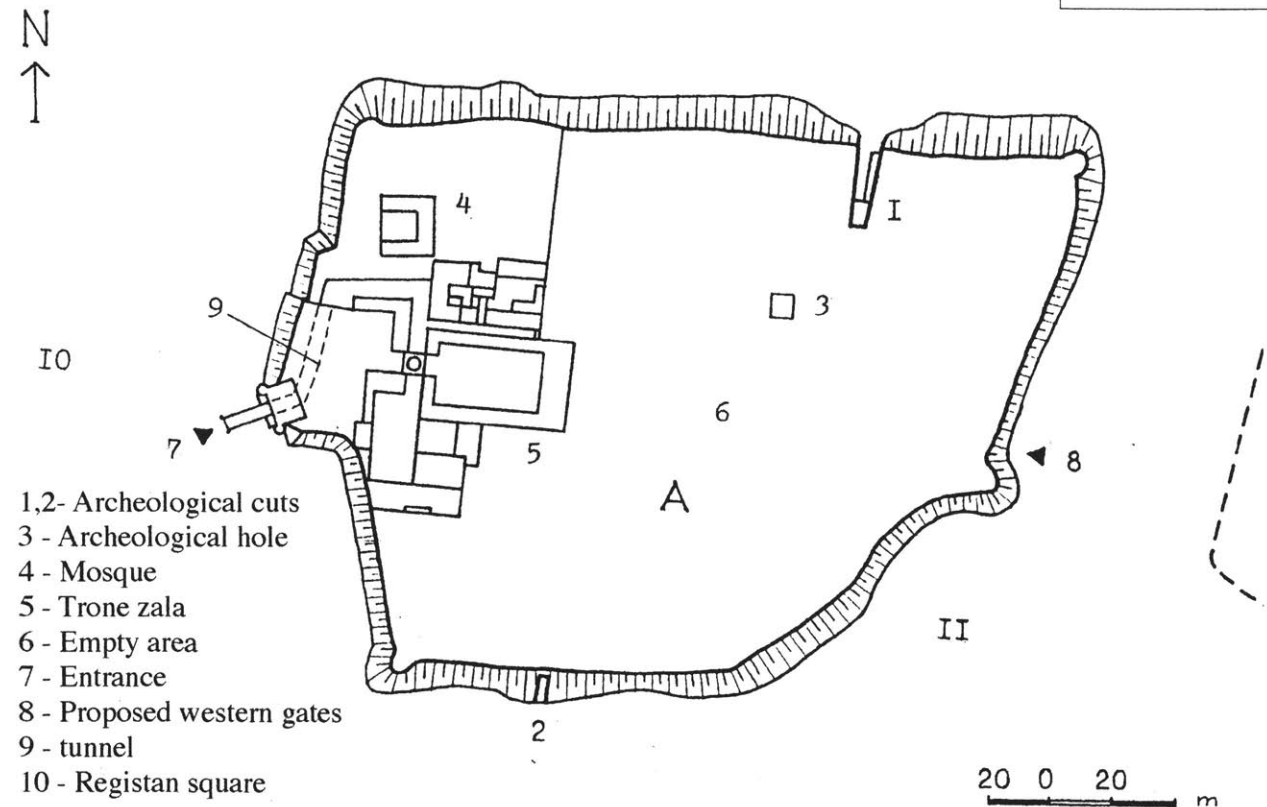
1. Angob is a special ceramic lacquer

tems and the appearance of Shakhristan, the fortified settlement acquired the functions of a fortress.

The character of the initial settlement of Bukhara, based on archeological research of the bottom layers of the city, is also verified by historical myth, and in turn, proves its truthfulness. This is a brilliant fragment of the story "Hazain al-ulum" by Abu Hasana Nishapuri, included in the "Bukhara History" by Muhammad Narshahi. The text reads: "... the place where Bukhara is now situated, was a swamp, part of which were thickets of reed, and the other part was trees and lawns. Certain places were such that no animals could traverse them. The reason was that in areas of Samarkand when the snow melted, the water collected and formed a big river. The big river near Samarkand is called Massif. There was so much water in that river that the stream washed away the soil and took away a lot of clay, so that hollows were formed. Consequently, a lot of water and clay reached Bitik and Farab and were deposited at the place where now Bukhara is; the area was slowly filled with soil and flattened out, forming the city of Bukhara in its flat part and a large river Sogda alongside. People from all countries flocked there and the place started to flourish. This explains the creation of the first settlement in this area. Unfortunately, this also destroys a theory of Prof. Notkin about the creation of the first settlement on the intersection of two Silk Routes.

In my thesis, based on previous and new data, which analyzes the character and content of the lower cultural layers of Bukhara², I will develop a hypothesis of the first settlement development and its relation to the surrounding area. The bases for dating these layers are the development of ceramics production in Bukhara and the geographic distinctions among early ceramics, as they were classified by researchers of the Institute of Archaeology upon the evidence collected during excavations³. This will help to establish the borders around the first settlement of Bukhara.

Ark



Modern topographic situation of Bukhara

Modern Bukhara clearly demonstrates the old tri-partite structure of the city (Citadel, Shakhristan and Rabad). It is also possible to divide rabad into two parts - the earliest Rabad and the oldest, which was the extension of the first Rabad in the 10th. c.A.D. Study of the ancient sources helps me to gain a deeper understanding of the city's development. The Citadel or "Kuhindiz" ("Kuhandiz" or "old fortress" in Arabic). Later the name was shortened to "K,ndiz" or "Kunduz" or "the old city" (Persian, "Shahr-istan," Arabic, "Medina"). The suburban area was located between the old city and the new wall. This wall was built during the Muslim period (in Persian descriptions this wall is called "rabad").

2. In 1970-1980's, in Bukhara, a group from the Institute of Archaeology of Academy of Sciences of Uzbekistan SSR were conducting archaeological excavations. I. Ahrarov, then A.R. Mukhamedzhanov were in charge. In addition, archaeological excavations are conducted by employees of Tashkent Institute of Restoration (Uzbektamirshunoslik) under the guidance of proff. Nekrasova. Archaeologists study architectural monuments before restoration. Special archaeological research of Bukhara is not covered by plans of the insitute, but lately, certain data has been gathered, that allows to make more precise and to add to the scarce knowledge about early history of the city. In different years, archaeologists D. Chunihin, S. Inutin, A. Voskovski, and S. Nizimkovski participated in the research.
3. "Ceramics of the lowest lewels of Bukhara", Mukhamedzhanov, Mirzaahmedov, Adilov, 1982, p. 81-97

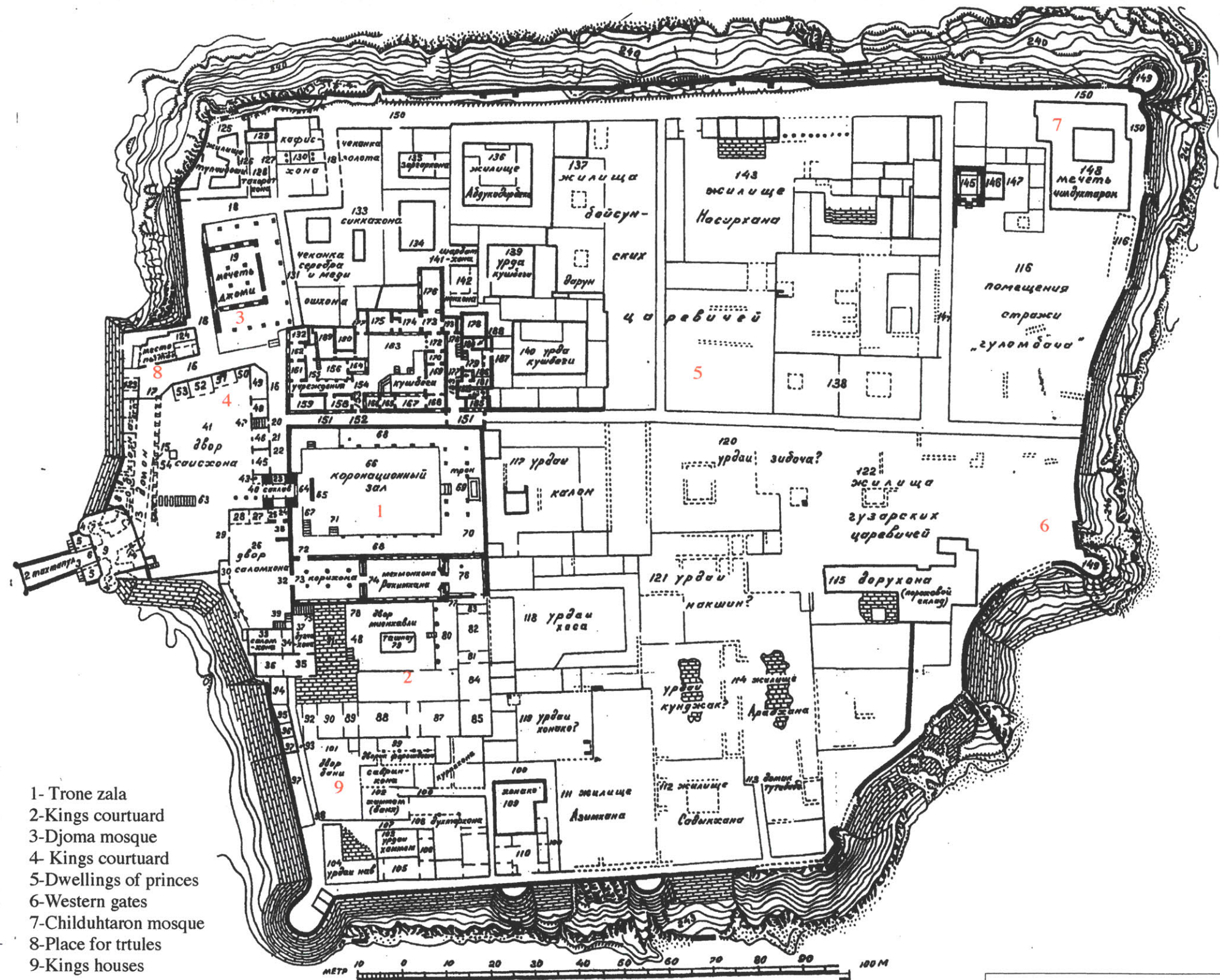
ARK

Dominating the city, the Ark is only lower than the minor Kalian. Throughout the whole existence of this Part of the city the Ark was the most important part in the city's life. It was destroyed and rebuilt again several times but only a few general reconstructions of the Ark can be traced from the archeological excavations.

Ark - Archeological data

The territory of the Ark has been researched by archeological excavation. It was placed 50 m from the northern end of the Ark and 75 m from eastern end. The depth of the excavation was 21 m. In the excavation archaeologists revealed several horizontal layers were attached from the side of the city. Three layers belong to the bottom mud and reed mixture part of the wall, top - to the damp layering part. From the outside, three cultural layers, one above the other, were attached to the main wall. Above them, there were also two small cultural levels, neighboring the damp layering of the wall. All the layers were separated by clean soil, revealing no historical objects. Their contents are uniform. Upon dissection, they turn out to be ribbon-like layers of ash mixed with chalk and saturated with animal bones and fragments of everyday ceramics.

The findings in the bottom three levels present particular interest. The collection of ceramics, obtained from the lower level (XXXIII-XXXII layers), is composed of table- and kitchen-ware. The reservoirs of goblets and glasses are cylindrical or cylindrical-conic, their pedestals have small incisions, and are insignificantly profiled. The vessels are covered on the outside by red "angob" ¹ either



- 1- Trone zala
- 2-Kings courtyard
- 3-Djoma mosque
- 4- Kings courtyard
- 5-Dwellings of princes
- 6-Western gates
- 7-Childuhtaron mosque
- 8-Place for trtules
- 9-Kings houses

Ark in the 10th. c. A.D.

solid polish or with stripes. Fragments of broken glasses and goblets are characteristics of ellinized ceramics. They are dense, with small pores, either of yellow or brick-red color. The bowls are represented by two types of crowns. One is with a beak-like edge, from gray clay, polished from inside; the other is covered by light "angob". Vessels used for home - jugs, pots and cups were usually covered by light angob.

The middle level (XXXI-XXIX layers) is separated from the lower one by a clean layer of clay. Ceramics, with the exception of a few boilers' fragments, were prepared on a pottery range. The most striking are the goblets and glasses. The vessels were covered by either bright-orange or dark-red "angob", on top of which the polish was placed. Three types of polish were fixed: vertical stripes, horizontal stripes and solid. Certain goblets have two types of polish: vertical at the bottom and horizontal at the top. Their fragments display small pores and are made partly with fine sand, red or brick-like, and are irregularly burnt. The fragments of bowls are brick in color and dense. The jugs are represented by two forms. The first are - medium-size jugs with round or oval handles attached to the crown at the top and to the reservoir at the bottom. The second type is exemplified by bigger jugs, whose crowns are fairly thick. The vessels of these form are covered by light in color, rarely by red "angob". Their fragments are dense and dark-red. Some pieces are poorly baked. The dough of vessels for kitchen/home contain sand and plaster. In addition to ceramics, some metallic tools were discovered on that level.

The ceramics from the upper level (XXVIII-XXIV layers) were made by machinery, with the exception of boilers and braziers. Goblets of bell-like shape have tall, sometimes asymmetrical pedestals, and elongated narrow reservoirs. On the outside, the vessels are covered by light or red "angob", on top of which vertical stripes polish is

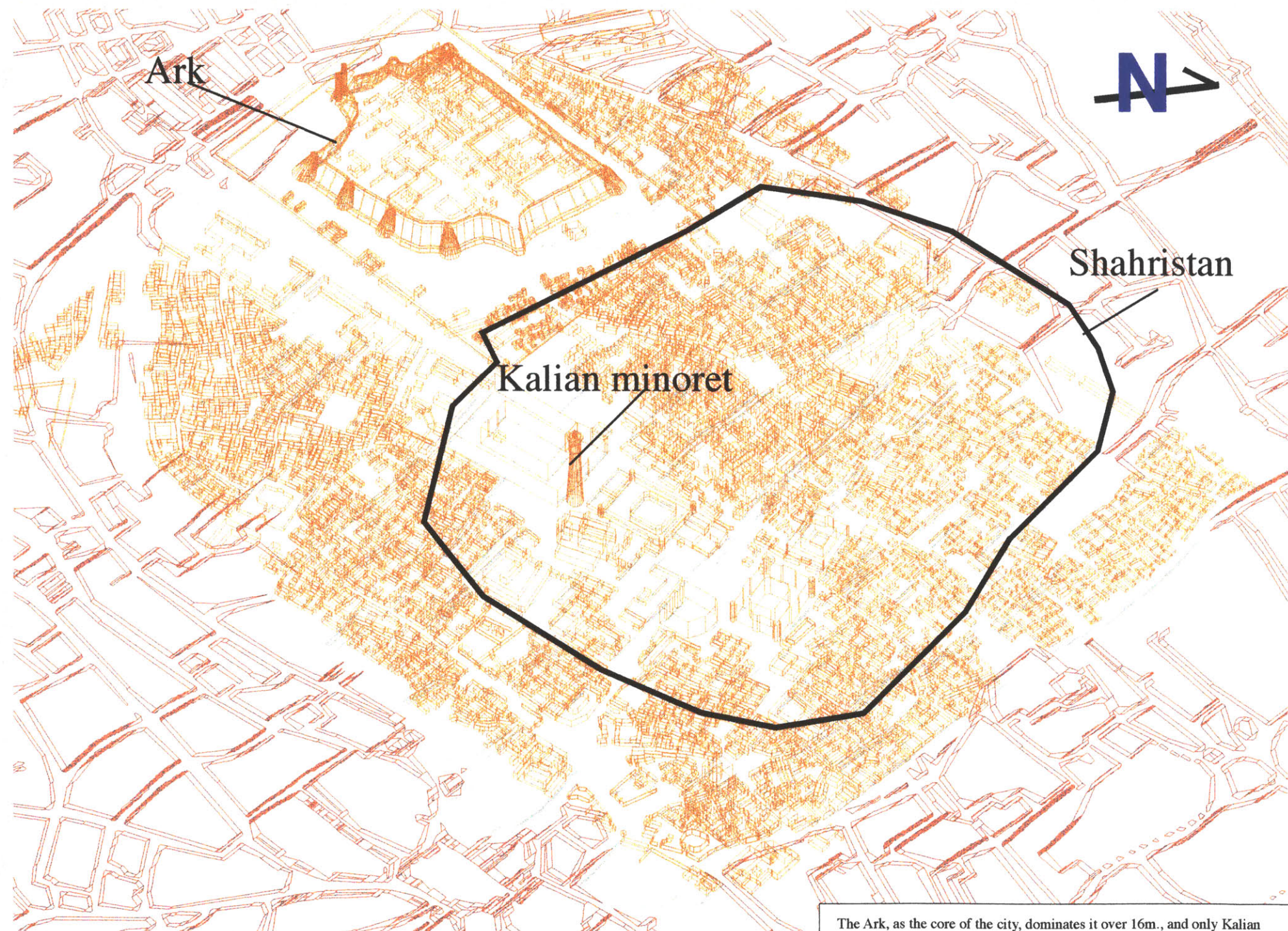
placed. Some of the goblets are of gray clay with black polish. Their fragments are dense, often irregularly burned. Jugs with one handle are often fairly large. Their fragments are dark-red and covered by light "angob". The pots have a

thickened crown, short neck and enlarged reservoir.

Braziers -- large flat vessels with short outstretched walls and somewhat convex bottom were perfected on the pottery range. In the collection of ceramics of this level, there

were some fragments of vessels, ornamented in one case by red "angob", in the other - by mica.

It is possible to trace the transformation in forms



The Ark, as the core of the city, dominates it over 16m., and only Kalian minoret is 15m. higher than the Ark

and technology in a small ceramics collection from cultured layers, adjoining to the built-up damp layering part of the wall (XXIXVIII layers). The goblets lack red "angob" and polish. The fragments of vessels are more friable and, in the dough of certain table utilities, a mix of chark was discovered.

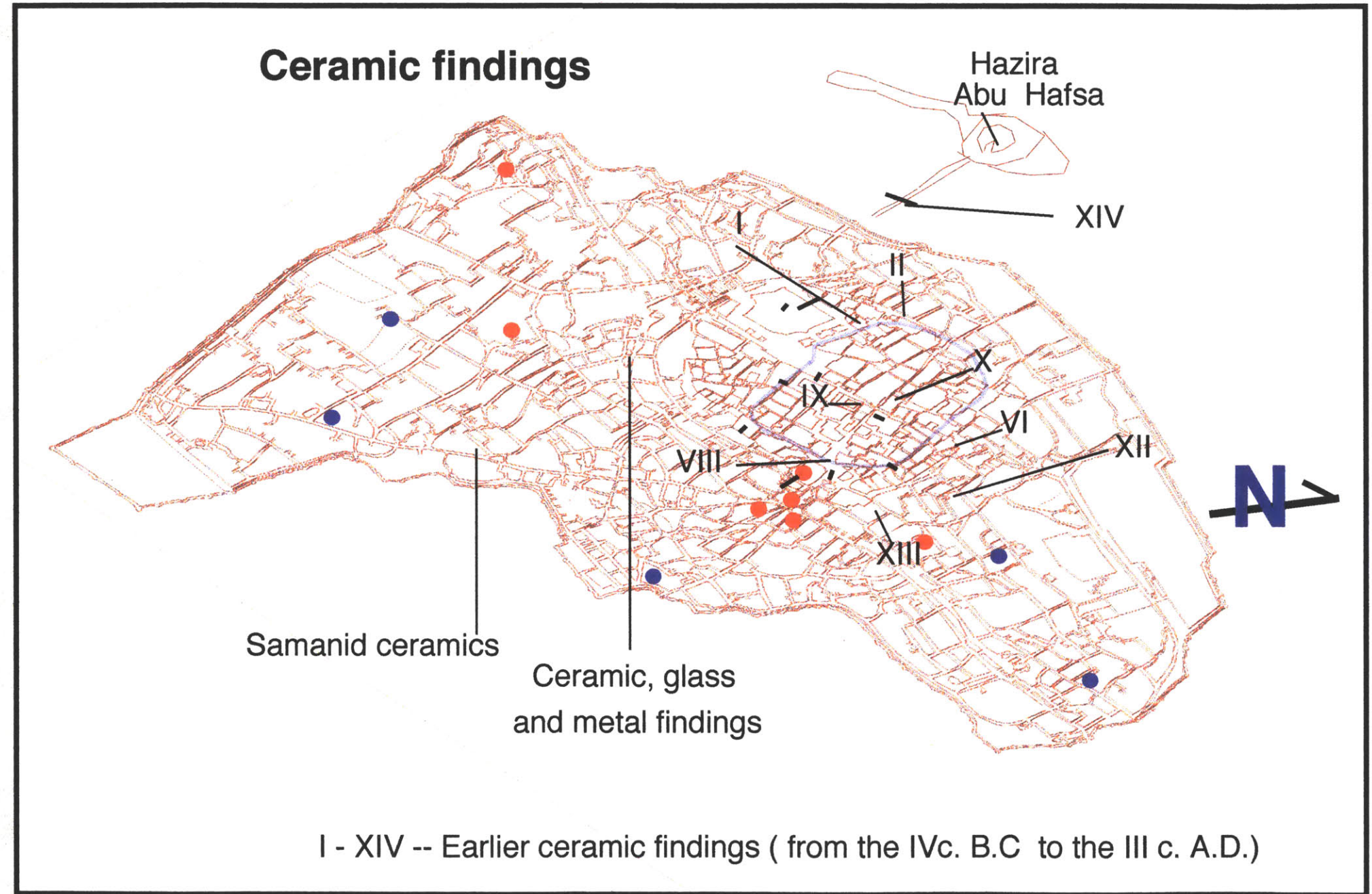
The ceramics from the three lower cultural layers, adjoining the foot of the main wall of the Ark, are analogous to those in the cities and settlements of Bukhara oasis, in Kitab¹, Afrassiab complex in Afrassiab 3 - 4 c. A.D.², and others. Relying on a chronological chart of ceramics in Bukhara, it is possible to date the discovered samples to the period of Bukhara in the 1st - 3rd c. B.C., that is, 3rd c. B. C. to 1st - 2nd c. A. D.³.

Due to the scarcity of the discovered objects, it is difficult to date ceramics from layers adjoining the damp layering part of the wall. Conditionally, the ceramics can be dated to the period of Bukhara 4 - 5, toward the end of 2 - 3 c. B.C.⁴

Therefore, the construction of the earliest wall of the Bukhara fortress, composed of a mixture of mud and reed and the blocks made from it, can be dated to the end of 4 - 3 c. B. C. If one can assume that the walls of the fortress were assembled by analogous methods from other sides as well, then the initial area of the Ark was about 2-2.5 hectares.

We should also note that the prospect holes near the foot of the fortress contained cultural layers, up to 1.5 m thick, which were covered by subterranean waters. They contain abundant ceramics collections, similar to those described above.

1. "New data in the history of Bukhara", Krashennnikov, 1977, p. 158, 160.
 2. "Varahsha", Shishkina, 1968, p. 71-73.
 3. "Ceramics of the lowest levels of Bukhara", Mukhamedzhanov, Mizaahmedov, Adilov, 1982, p. 83-89, drawings 1, 2.
 4. "Ceramics of the lowest levels of Bukhara", Mukhamedzhanov, Mizaahmedov, Adilov, 1982, p. 83-89, drawings 2, 3.



SHAHRISTAN

Shakhristan is situated about 60 m to the east of the Ark, occupying an area of 28-30 hectares⁵. It's relative-

ly higher than its surroundings for about 2 - 5 meters. Visually, the northwestern corner, flanked by a powerful tower,

5. The Shakhristan's area shown here is based on new data, previously unpublished.

is prominent, as is a part of the northern wall. Shakhristan is divided into four unequal parts by main roads running from the North to the South and from the West to the East. Its surface is uneven. The elevations are apparent in northwestern and southeastern quarters. The plan of the northeastern quarter is significantly changed at present.

Shahrستان - Archeological data

By the time of the arrival of the Arabs, according to Narshahi, the city occupied the area of Shakhristan. Its frontiers were discovered by the first researchers of Bukhara (Vasili Shishkin and Olga Suhareva). It was believed that Shakhristan occupied a territory of about 33-35 hectares. Later archeological excavations made some corrections in their assumptions.

An earlier construction was found in the western part of Shahrستان during the excavations of Prof. Nekrasova and was under the western wall of the Kalian mosque, while the inside south-eastern corner was found to be located in the very center of the madras Bozori-gul or Chukur-madrise.

I assume that this might have been the western frontier of Shakhristan. This allowed me to make a rough sketch of the city wall. The area of the city inside these walls is about 28-30 hectares. The walls, preserved to up to 5 m in height, were constructed from damp bricks by expanded masonry.

In the "History of Bukhara" Muhammad Narshahi gives information on the inner structure of the city: "Shahrستان was divided into four parts and every part was organized as a village...".

Until recently, this information was considered doubtful, and the text itself was thought to be mutilated by later authors. Several scientists believed that the Shahrستان

had been divided into four parts by the roads only. The aforementioned discoveries prove that the Shahrستان was divided physically into four parts by the walls, traces of which were found by Prof. Nekrasova. Certain researchers voiced an opinion that the plan of Bukhara is very conservative. For example, Oleg Bolshakov believes that "the city was built according to the plan of ancient Roman cities, but not at the same time with them. It was built later."

Archeological excavations of Shakhristan had confirmed the writings of Muhammad Narshahi, but interpreted them differently from how the scientists formerly did. The next paragraph will be concentrated on it.

Thus, in the cut to the North of madras Mir-i Arab, the walls limiting the north-western part of Shahrستان were discovered.

During the excavations for studying a waterway along the northern facade of Kalian mosque, the archeologists uncovered the remains of a wall made from damp bricks, which is an extension of the wall under the western part of the same mosque. The wall that they found can be traced from north to south for about 100 meters, while its crests along the northern facade of Kalian mosque were located only 1-1.5 meters from an asphalt-covered road.

Shahrستان - Ceramic findings

III. Fragments of ceramics, covered by red "an-gob" with polish can be encountered in the area of north-western corner tower of Shakhristan, which contains a late medieval prison.¹

IV. At the western edge of Shakhristan, not far

1. Fragments of ceramics from corner tower of Shakhristan were discovered by prof. Nekrasova during archeological excavations of late medieval prison - "zindan".

from the prison, a prospect-hole was made, at about 15 m below the ground². The prospect-hole stretches to the zero level, which is made up of a dense layer of swampy greenish soil. Above this level, in the cultural layer, we assembled a collection of ceramics, dated by researchers to the middle of the first millennium before our era. Above, in succession, were the layers, containing ceramics from 3rd - 2nd c. B. C.; 2nd c. B. C.- 1st c. A. D.; and 2nd - 4th c. A. D. The remains of the buildings of damp bricks were fixed as above. They were accompanied by ceramics from 5th - 8th c. A.D.

V. Some singular pieces of antique ceramics were discovered in the archeological prospect holes on the territory of the Kalian mosque and Kalian minaret³.

VI. A prospect hole was placed in the central part of Shakhristan, between Tim Abdullakhan, madras Abdullaaz-khan and the trade dome Tak-i-Zargoron⁴. It was lowered to the depth of 18 m to the zero level, composed from dense layer of swampy greenish soil. A collection of ceramics was assembled from the cultural layer above the zero level, dated to the middle of the first millennium B. C.

VII. In the archeological dig to the north of the madras Mir-i-Arab under the early medieval wall of Shakhristan, five cultural layers were distinguished, the earliest dating to the 2 c. B.C.⁵ According to Prof. Mukhamedzhanov, the depth of cultural layers here exceeds 17 m. Above the continent, composed of separate strata of river sand and mixture, a silt layer, 40-70 cm thick, was found. It was satu-

2. Arharov, Usmanova, 1978, p. 98-106

3. Architectural-archeological research was conducted in 1950s by archeologist S. N Urenev. Data about singular findings of antique ceramics is contained in his reports, contained in the archives of the Main bureau on the preservation of monuments of Ministry on the cultural affairs of the Republic of Uzbekistan.

4. "Creation and development of Bukhara's culture on the base of stratographical excavations", Smarch thesis, Arharov, Usmanova, 1978, p. 98-196.

5. *Ceramics of the lowest levels of Bukhara*, Mukhamedzhanov, Mirzaakhmedov, Adilov, 1982, p. 81.

rated with animal bones and ceramics. Its thickness increases to the south, toward madras Mir-i-Arab, under which it reaches 7.5 m in thickness.

According to researchers, the silt layer and the structure of the underlying zero level testifies to the fact that one of the delta streams of Zaravshan passed through there in antiquity. "Its expiring river-bed was subsequently covered by dense thickets, which in time were transformed into silt layer"⁶.

A prospect section was placed near the inner facade of early medieval wall of Shakhristan, discovered in archeological cut hole⁷. A lower layer, uncovered there, is represented by swampy soil, 1.7 m in thickness, which included ceramics' fragments from before 3 - 2 c. A. D. (XXXV-XXXII layers). Above, it is covered by a layer of soil with sandy strata (XXXI layer). Yet above, is the cultural layer, covered by silt with multiple sandy strata. The total thickness of the level is 2 m (XXX-XXVII layers).

VIII. The prospect hole, placed in the Sarai kazi Kalian quarter, to the northwest from the trade dome Tak-i Telpak Furushon, was lowered to the depth of 18 m. In the VI-XVII layers, the prospect hole cut through early medieval wall of Shakhristan, mounted from mud and reed mixture with rare inclusions of damp bricks⁸. Sixteen cultural layers were uncovered below it, containing ceramics, remains of trade production and architecture. The continental stratum is represented by layers of mixture and river sand⁹. The earliest ceramics material contained in this level is dated by researchers to the 2 c. B.C.^{10 11}

IX. The prospect hole, placed near the western fa-

6. *Ceramics of the lowest levels of Bukhara*, Mukhamedzhanov, Mirzaakhmedov, Adilov, 1982, p. 99.

7. "Fortification of old settlements and towns in Sogda valley", Turabekov' 1990, p. 57-58.

8. *Ceramics of the lowest levels of Bukhara*, Mukhamedzhanov, Mirzaakhmedov, Adilov, 1982, p. 99.

9. "Monuments of the lower part of Zaravshan river", Adilov, 1987, p. 6.

cade of the Kalian mosque, was lowered to the depth of 9.5 m to the level of subterranean water. The fragment of the western facade of early medieval wall of Shakhristan, 4.9 m tall, was uncovered under the wall of the mosque. The bottom part of the wall is made of damp brick by expanded masonry. The soil from the cultural layer served as the material for the wall. Inside, there are pieces of coal, seeds of "ganch", animal bones and ceramic fragments. Ceramics material is represented by an assortment of shapes.

Most notable are the fragments of glasses and goblets. Their fragments are dense, with 8 small pores and of brick-red color. Inside, the vessels are covered by red "angob" without polish.

X. At the time of observing the excavation along the northern facade of the Kalian mosque, the continuation of the western wall of Shakhristan, oriented towards north, was revealed. The wall can be traced along the whole length of the facade of the mosque -- more than 100 m. From the inside of the wall, a collection of ceramics was assembled. Together with material from previous prospect hole, this collection is from the period of Bukhara 3-4 and can be dated somewhere between the 1st. c. B. C. and the 3rd c. A.D.¹

10. *Ceramics of the lowest levels of Bukhara*, Mukhamedzhanov, Mirzaakhmedov, Adilov, 1982, p. 83.

11. Archeological research was conducted as an assignment of the Main bureau of the preservation of monuments of the Ministry on the cultural affairs of the Uzbekistan Republic. Reports are kept in the archive of bureau (prospect holes IX-XII, XXIV).

1. *Ceramics of the lowest levels of Bukhara*, Mukhamedzhanov, Mirzaakhmedov, Adilov, 1982, p. 87.

XI. An archeological prospect hole, placed on the road between the trade dome of Tak-i Telpak Furushon and Tak-i Zargaron was dug to the depth of 10 m. In the lower part of the prospect hole is a layer, 1.5 m in thickness, composed of a multitude of strata of swampy-river deposits of clay and clean gray sand. In it, fragments of ceramics with red polish, "krits" and animal bones were uncovered. Above it, there were the remains of buildings from rectangular damp bricks.

XII. The prospect hole placed in the south-eastern part of Shakhristan in the courtyard of Chukur-madrese (madrasa in the pit) was lowered to the depth of 9.4 m. There, an inner corner of the early medieval wall of the city, preserved to 5 m in height, was discovered. The wall was laid from rectangular damp bricks through expanded masonry. Cultural layers underlying the wall were mixed with layers of clean gray sand, up to 70 cm thick. The remains of the buildings were not found. A collection of ceramics was gathered from the inside of the early medieval wall and from lower cultural layers of the prospect hole. It can be broadly dated from the 1st. c. B. C. to the 3rd. c. A.D.²

RABAD

2. *Ceramics of the lowest levels of Bukhara*, Mukhamedzhanov, Mirzaakhmedov, Adilov, 1982, p. 87.

The trade and crafts part of the city - Rabad - was developed to the South and to the East of Shakhristan, tending to concentrate near a major artery of the Shahrud river. The Shahrud traverses the southern part of the Rabad from east to west. There is an appreciable lowering of the surface along the Shahrud river.

To the north of the late medieval walls of Bukhara there was a necropolis, the Haareti Imam. In the center was the tomb of Hodji Imam Abu-Hafsa, who died in 217 / 832³. The necropolis is situated on two elevations. The first stretches 260 m in length from west to east and is 6-8 m in height. The second is perpendicular to the first. Its length is 380 m and height is 6 m. This area is directly related to my thesis proposal in the next two chapters of my paper because it was the place where the wall of the 10th. c. A.D. was located.

Archeological data

XIII. At the time of archaeological excavations of Magoki Attori mosque, situated 75-80 m to the south of Shakhristan, the thickness of the cultural layer was 13 m. In the prospect holes, fragments of red-polished ceramics, dated to the time of Kesh-Kushans, were found. At the bottom of

3. "History of Bukhara" Narshahi, 1897, p. 76. This fact proves the description of Narshahi as well.

prospect holes, relatively thin cultural layers intermix with layers of pure sand, 65-80 cm thick. Remains of the buildings were not discovered in the bottom cultural layers⁴.

XIV. On the territory of the Haareti Imam complex, which serves memorial and cult functions, an archeological dig was lowered to the depth of 8 m to the level of subterranean waters. In the dig, a monumental wall, preserved to the height of 6 m, was found. This wall at the bottom was built from damp bricks by expanded masonry.

The continent uncovered by the series of prospect holes in Shakhristan represents river and lake-swamp deposits⁵. Its relief is irregular, with both elevations and significant drops.

On the basis of the above stated facts, the following reconstruction of the initial character of the settlement of the city is proposed.

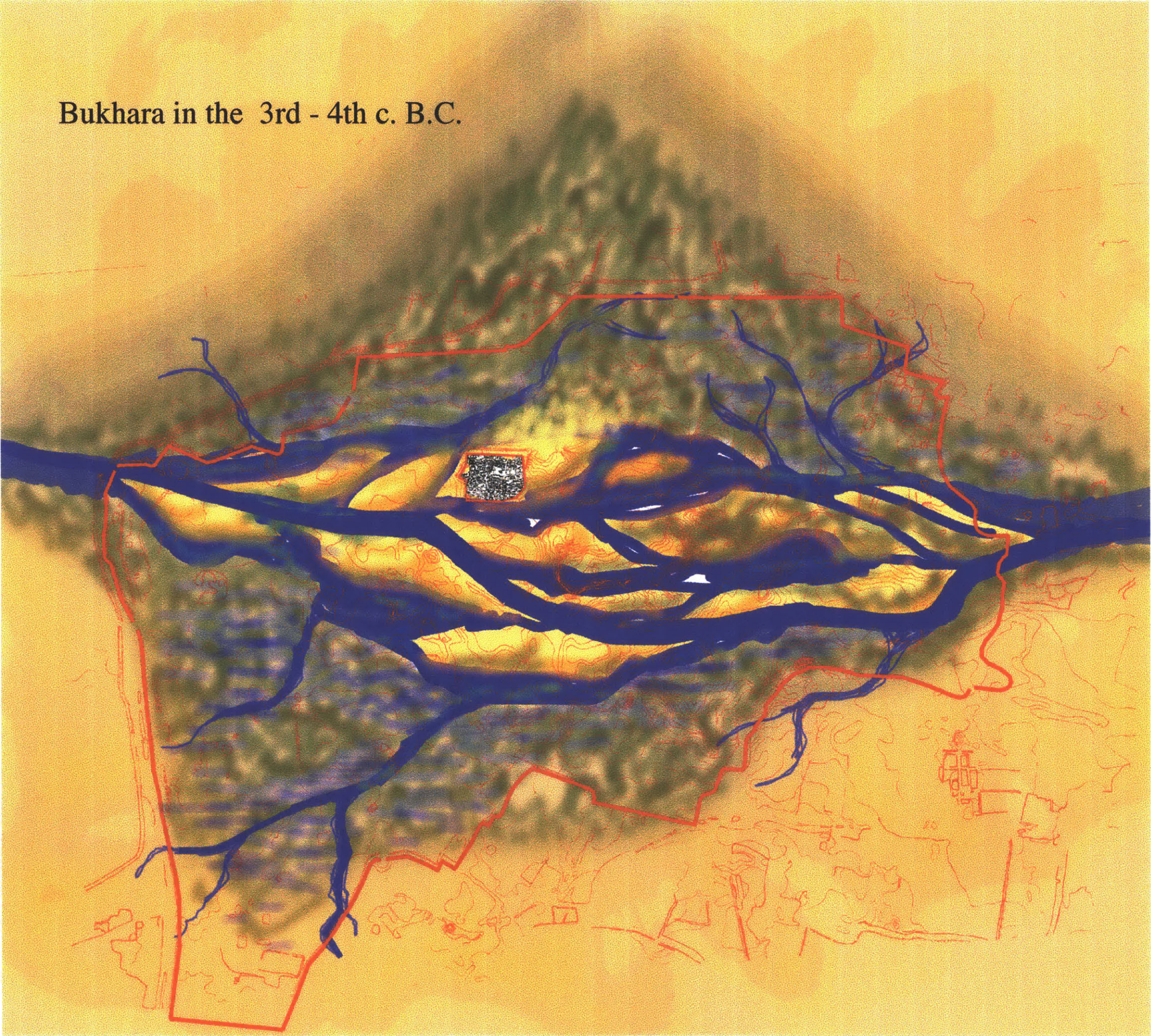
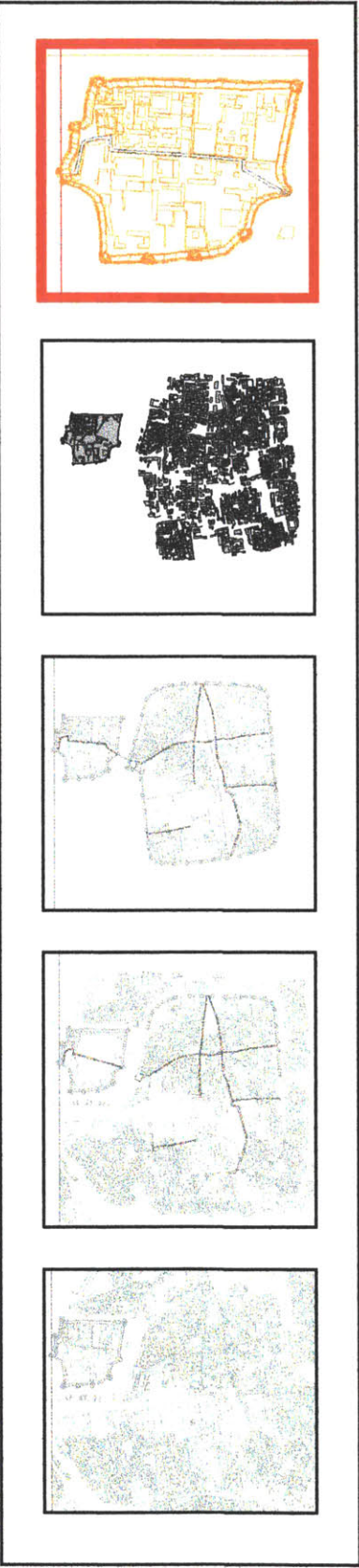
4. "Varahsha", Shishkin, 1955, p. 56-57.

5. *Ceramics of the lowest levels of Bukhara*, Mukhamedzhanov, Mirzaakhmedov, Adilov, 1982, p. 98.

The above cited opinion about the forrest origin of the hill, on which the fortress was built, is improbable.

According to the geologic-geographic idiosyncrasies of the river Zaravshan's delta represents flat valley with only insignificant slope of the terrain. The upper quaterly layer is composed of alluvial deposits, covered by more recent remains, originating in the river Zaravshan. Geological-geographical situation in the Bukhara oasis is thoroughly examined by V. A. Shishkin, 1963, p. 8-12.

Bukhara in the 3rd - 4th c. B.C.



Chapter III

Bukhara formation proposal

In the early period of the Bukhara formation, geographic factors were predominant. Supposedly, one of the channels of the Zarafshan river periodically laid down new channels during spring floods. As a consequence, human-built structures were washed down by streams carrying enormous amounts of silt and sand.

Retreating, the river returned to its old bed. Lakes remained in the flooded areas, which eventually turned into swamps. Eventually, life returned to washed sandy-clay elevations, which were held together by plants; new buildings were constructed.

On one of these elevations, the Ark appeared. At the end of 4th - 3rd c. B.C., it occupied only 2 - 2.5 hectares, and was surrounded by the fortress wall from mud and reed mixture. On the territory of the Ark, there was a monumental building, the remains of which were discovered in the central part. The Ark was, at that period, a small, well-fortified settlement like a town. Wide surrounding areas were not behind the walls, and were sporadically settled, due to the flooding of the Zaravshan channel. Later, with the creation of the irrigation system and the distinction of Sha-

khristan, the fortified settlement acquired the function of the fortress-Ark.

The trait of the primary Bukhara settlement, based on archeological excavations of the lower levels of the city, is confirmed by historic legend, and in turn, verifies its truth. This is a brilliant fragment of the lost piece from the work "Hazain al-ulum" by Abu-Kassana Nishapuri, included in the "History of Bukhara" by Muhammad Narshaki.

Citadel - Ark ¹

The territory of the Ark has been researched by archeological excavation.² It was placed 50 m from the northern end of the Ark and 75 m from the eastern end. The depth of the excavation was 21 m.

In the lower part of the dig, shortened here by the area of the prospect hole in 4 square meters, was a layer about 2 m thick (XXXII-XXXVIII layers). Its bottom part was composed of pure clay with a burned layer, including fragments of burnt wood. Its upper part was represented by cultural layer, with heavy concentrations of burnt buildings, animal bones and ceramics.

A powerful wall of mud mixed with reed, 3.5 m

1. In this part of my thesis the numbers I-XIV signify the places of palcing of archeological prospect-holes and excavations, noted on Figure "Archeological excavations"

2. *Ceramics of the lowest lewels of Bukhara*, Mukhamedzhanov, 1983, p. 60-64. and Mukhamedzhanov, Adilov, 1987, p. 77

high, was situated above (XXXVII - XXXII layers). The collection of ceramics (goblets, "fish plates", etc.), characteristic of the 1st period of Bukhara (4th - 2nd c. B. C.) was obtained from the cultural layer, underlying the wall. Another wall was fixed above the wall from mud and reed, about 3 m in height, made of mud and reed and by expanded masonry from damp bricks. It was dated on the basis of ceramics material from 3 and 4 c. B.C.

On the basis of the research done I made an assumption that the Ark appeared on the natural elevation covered by a forest in 4th -3rd c. B.C. Its walls became the defensive walls of citadel. The area of the Ark at that period is about 1-2 hectares.

Prof. Nekrasova made a section of the western wall of the fortress³. The cut is oriented from the North to the South. Its length is 25-21 m, the width is 6-8m and the depth -- 18 m. Four main building periods of the Ark are apparent in this cross-section.

The earliest wall of the fortress is about 16-18 m from the modern one. It is composed of several layers of mud and reed mixture and mud and reed blocks (the height of blocks is 0.9-1 m). The outer edge of the wall descends abruptly, while the inner edge creates a small landslide platform, about 3 m in width. The wall cannot be further traced to its foot. Its biggest width is 7.5 m, its smallest is 2.8 m. Its

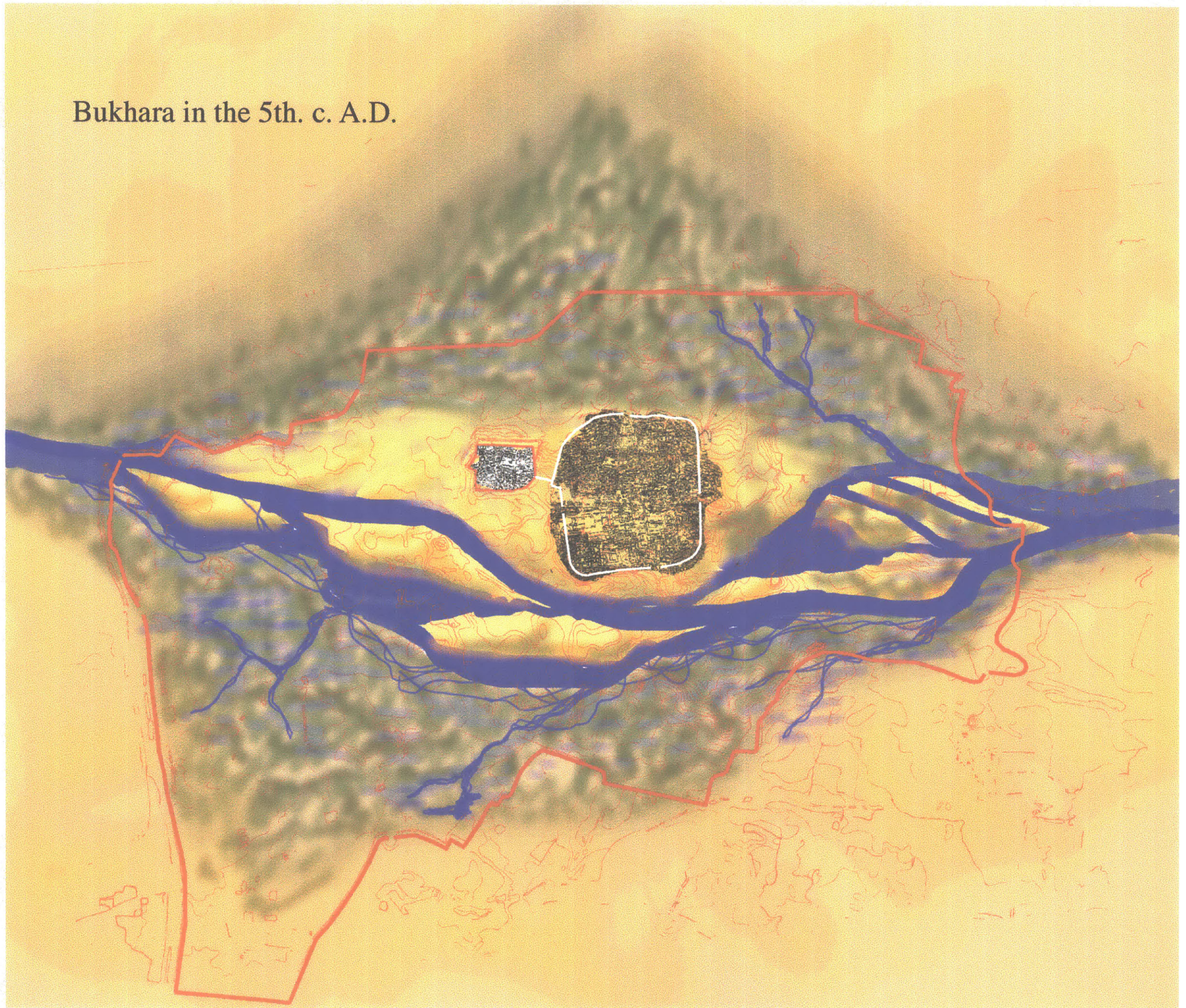
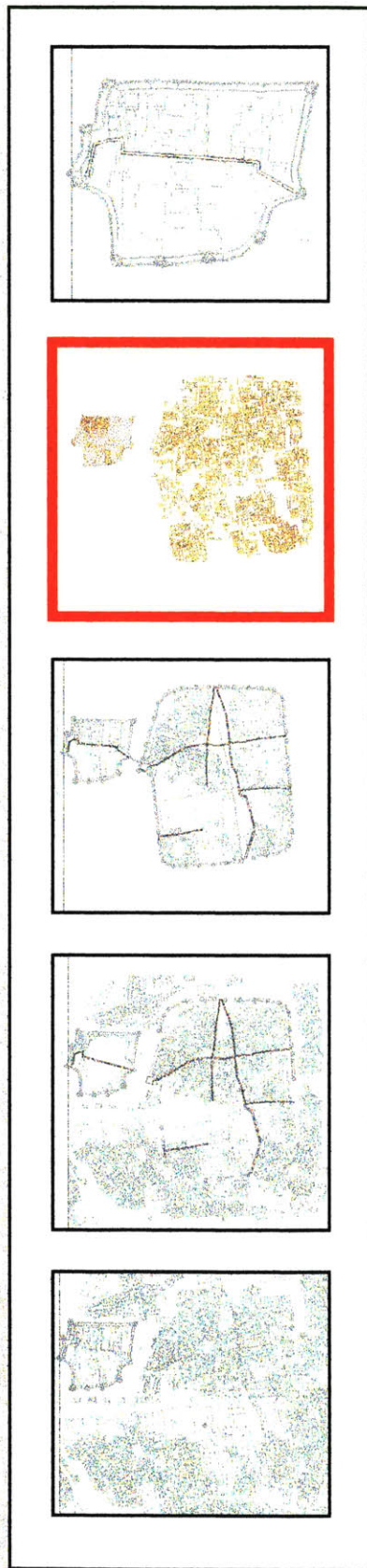
3. *Ark-citadel Buhari (Ark-citadel of Bukhara)*, Nekrassova, 1990, p. 15-27.

preserved height is 9 m (XXXVI-XIX layers). 2 m above the platform the wall is built by damp layering. The additional build-up of the wall is preserved to the height of 3.5 m with the thickness of 2.7-1.6 m (XVIII-XI layers).

Shahristan

After the appearance of the Ark ,the settlement began to grow and gradually spread out side the borders of the Ark walls. In the papers of Narshahi we find a description of the Ark and Shahristan. In his book, "The history of Bukhara," he writes that the Ark and Shahristan were situated on two hills made by the river. This description explains the appearance of Shahristan on the Eastern side of the Ark instead of gradual sgrowth of the city around the Ark. Architectural foundings in the area of Shahristan, dated to the 4th - 5th. c. B.C., prove my theory of the development of first settlement. Later on, but in the same century, Shahristan was surrounded by the wall, which was made out of clay. By that time Shahristan had four gates only. Presumably, they were situated in the Northern, Southern, Eastern and Western walls of Shahristan.

Bukhara in the 5th. c. A.D.



Bukhara - 5th - 7th centuries

At that time, Bukhara was a well-formed town center, capital of the ruling dynasty Buhar Hudats. The representatives of this dynasty believed that the dynasty was in power for 22 generations.

The small settlement was transformed into a residence of Buhar Hudats. From this period on, it can be called a Citadel or Ark.

Ark

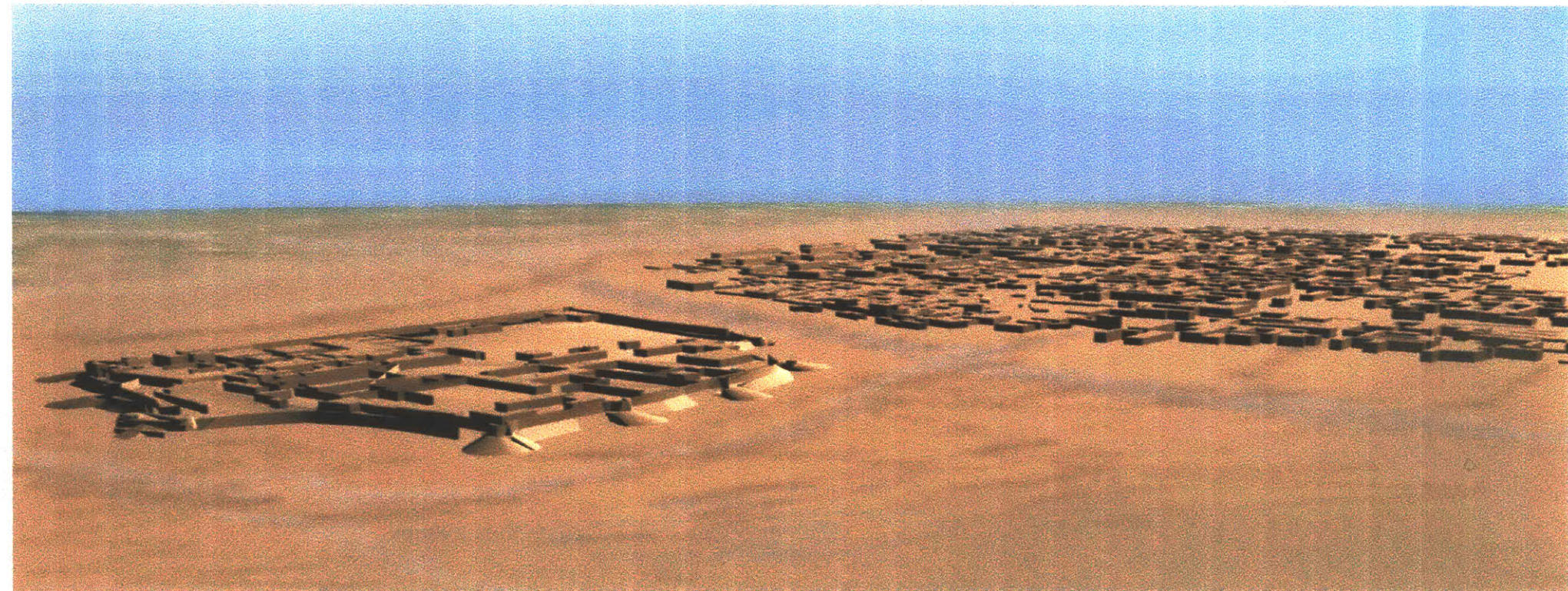
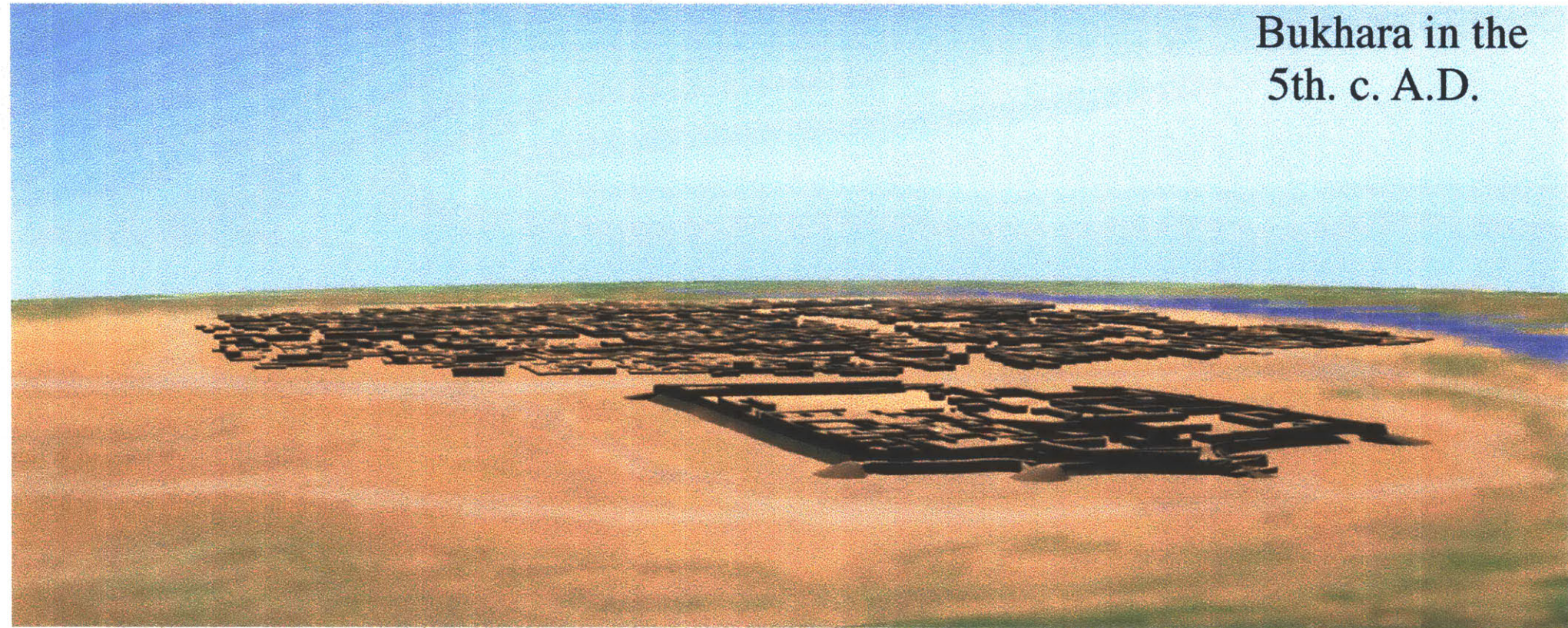
The Citadel was a center of attention for rulers. It was fortified along the perimeter by new walls, adjoining the old ones from the outside. The total thickness of the added part was 15-18 meters. As a result, the area of the Ark was increasing, approaching the current size. According to Narsahi, the palace of Buhar Hudats was inside the Ark. On its gates, an architect affixed the plaque with an inscription about the building. The fortress contained the temple of idols But-hona, which was transformed into a mosque by Kuteiba in 713. The fortress had two gates: one from the East side facing Shakhristan and one from the West side that entered onto the enormous plaza Registan. Inside the fortress, a road connected both gates.

Shahristan

In the 5th c. A.D. the Shahristan was already formed as a part of the city.

In the 6-7 c. A.D. the Shakhristan in Bukhara, unlike the ones in Samarkand, Balkh and Merv, had seven gates. Probably, the same religious ideas about the construc-

Bukhara in the 5th. c. A.D.

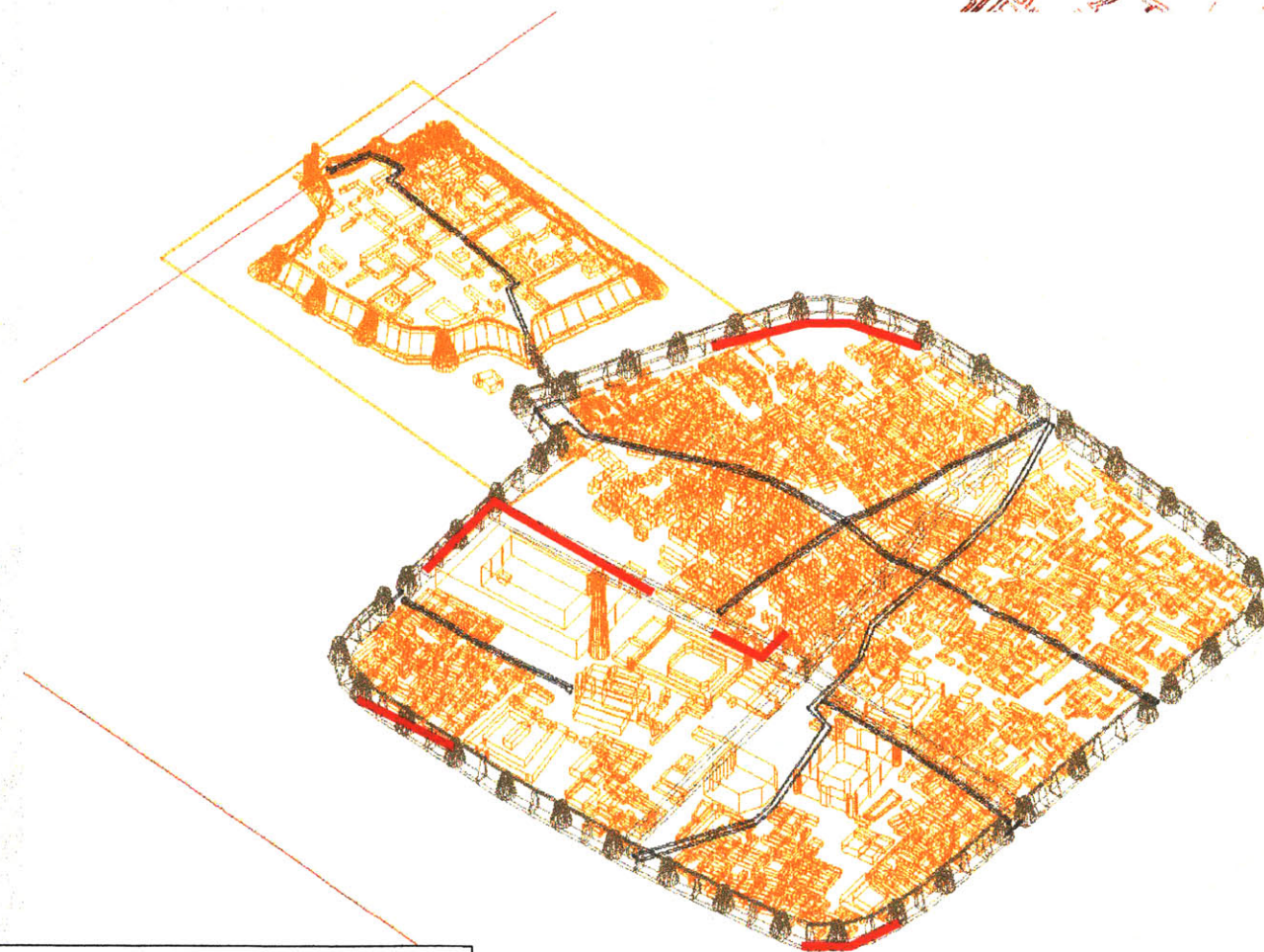


tion of the temple and the citadel caused that arrangement. The gates of Shakhristan were described by Istakhri and Narshahi. Narshahi counted the gates in the following order:

- 1- Market (bazaar) gate ("iron" gate by Istakhri), later called "traders of spices gate" - "Attarano " ;
- 2- Shakhristan gate ("Babaal Medina" by Istakhri) ;
- 3- Benu Sad gate;
- 4- Benu Asad gate;
- 5- the Citadel gate;
- 6- Khakk-rakh gate
- 7- New gate, built later than others.

Relying on the description of Narshahi, I could identify the location of those gates. It is clear, however,

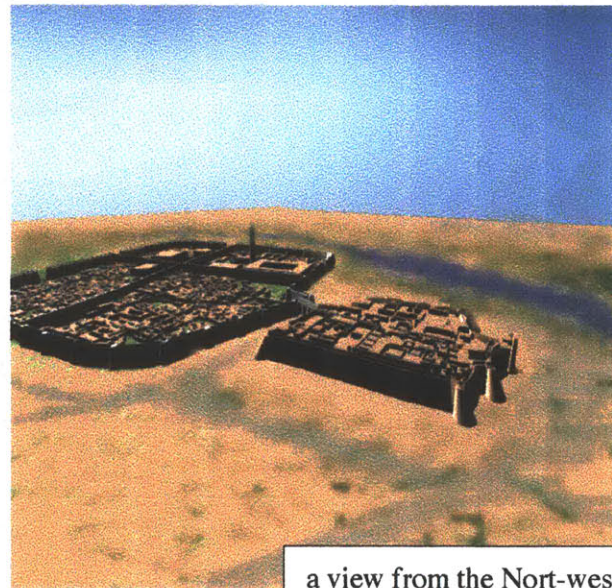
Archeological excavations (Shahristan wall)



Archeological excavations revealed several patterns of the old Shahristan wall



that the bazaar gate, Benu Sad and Benu Asad gates were located close to each other. The citadel gate was considered to be the strongest in Shakhristan. Close to it the fortification structure was built by a Turkish ruler Subashi- Tegin (a prince and a military leader.) That site was predominantly occupied by houses of the Arab population. In 10th c. A.D. the quarter, named Fagsadare, had been renamed. The Khakk-rakh (literary "road to . . . ?") gate had got its name after well known Abu Khafs, who lived there and died in 832 A.D.

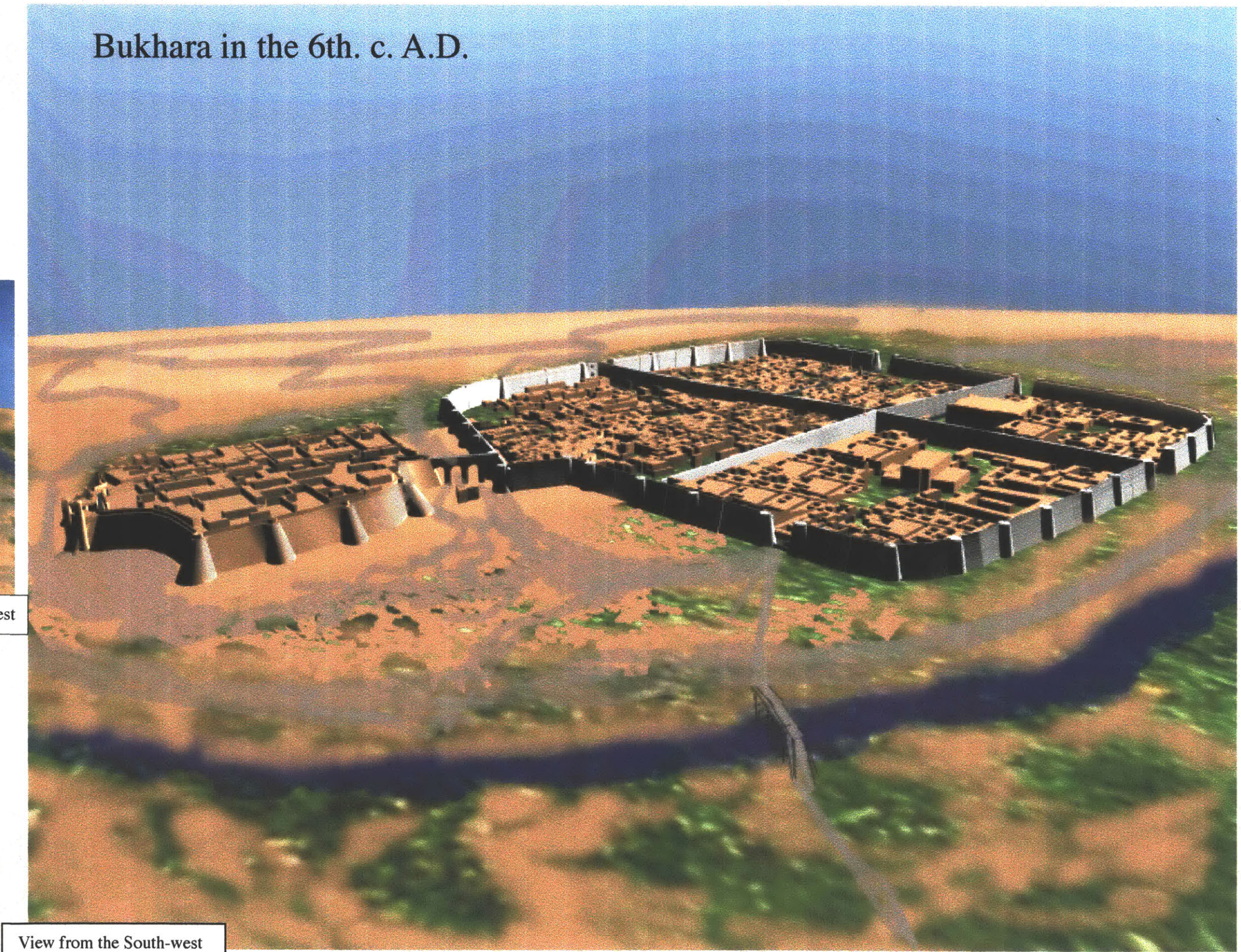


a view from the North-west

Rabad

The only market in the 6th - 7th c. A.D. was situated near the south gates of Shakhristan. Nearby, there were sites of pre-Muslim temples for cults of idols and fire-worshippers, later transformed into a mosque (the well-known Magak-i Attari).

To the north of the citadel, not far from the Muslim cult site, there was another ancient cult place -- the grave of Afrasiab. We possess relatively little material that could

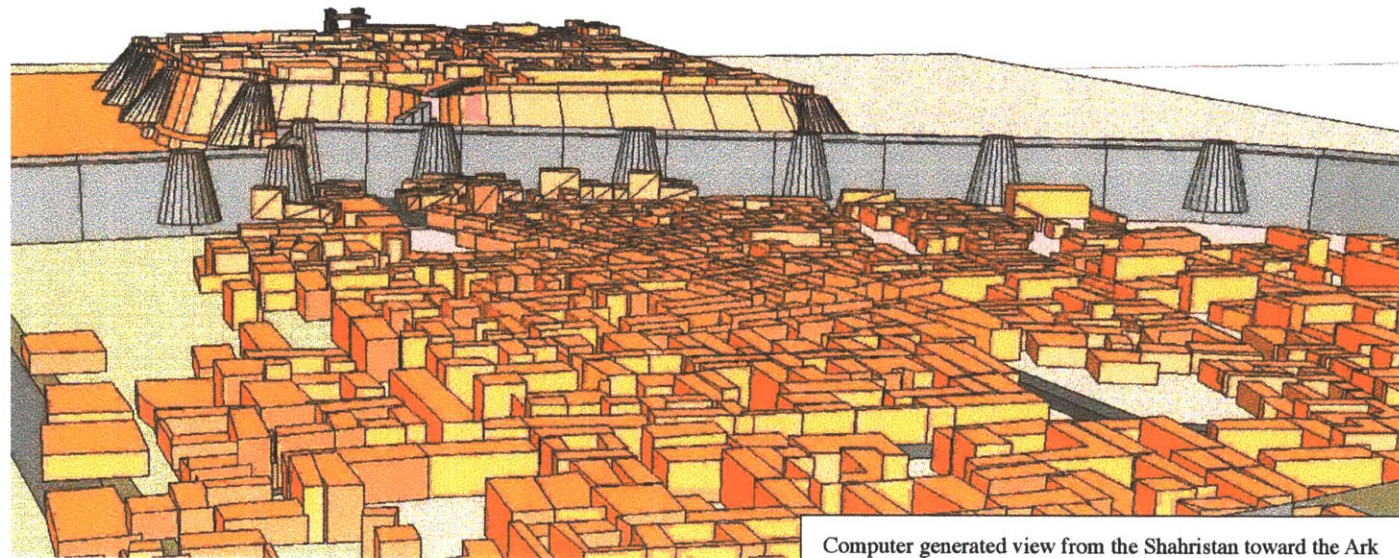


View from the South-west

Bukhara in the 6th. c. A.D.

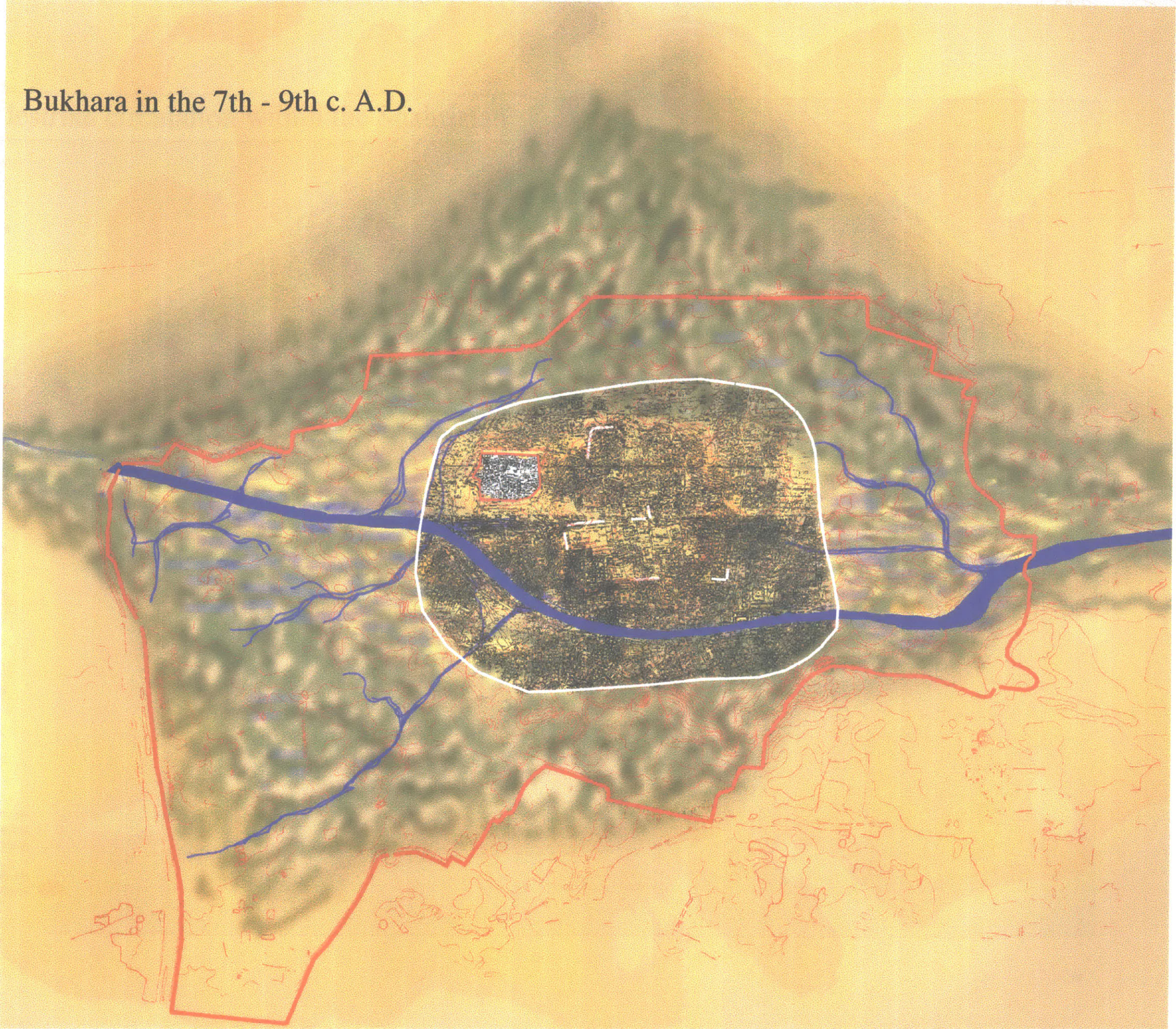
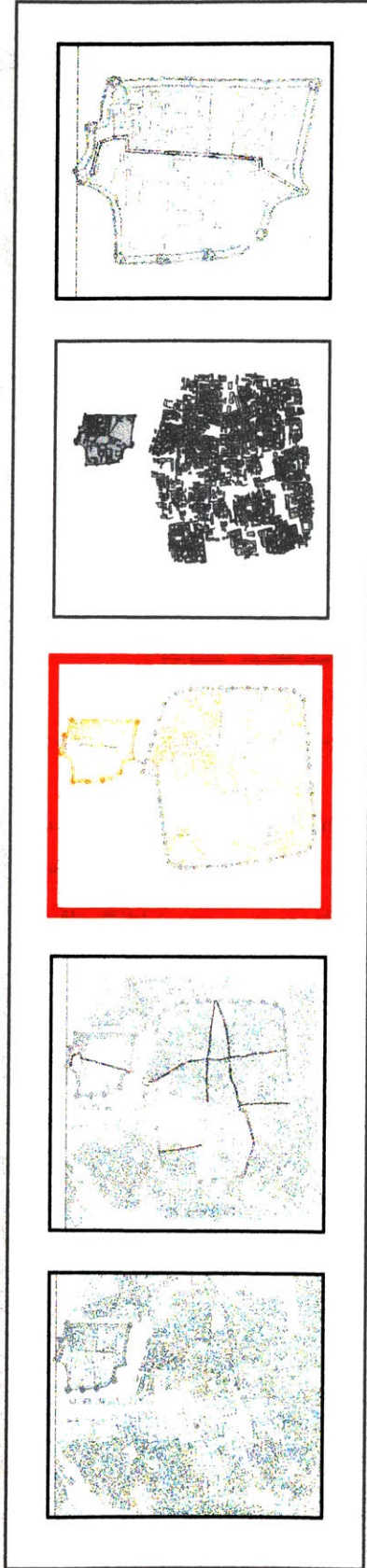
clarify the peculiarities of town life up until the last third of the 9th. c. A.D., when Bukhara became the capital of an enormous empire. Bukhara was governed by overseers. One of the most momentous events in city's history -- the construction of the wall encompassing the Citadel, the Shakhristan and already formed Rabad ,took

place in the middle of the 9th. c. A.D.



Computer generated view from the Shahristan toward the Ark

Bukhara in the 7th - 9th c. A.D.



Pedestrian circulation within the Shahrستان

Samanid period.

This was a glorious period in the history of Bukhara, well reflected in the literature. It would appear that no problems should arise in determining the territory of the city at that time.

Ark

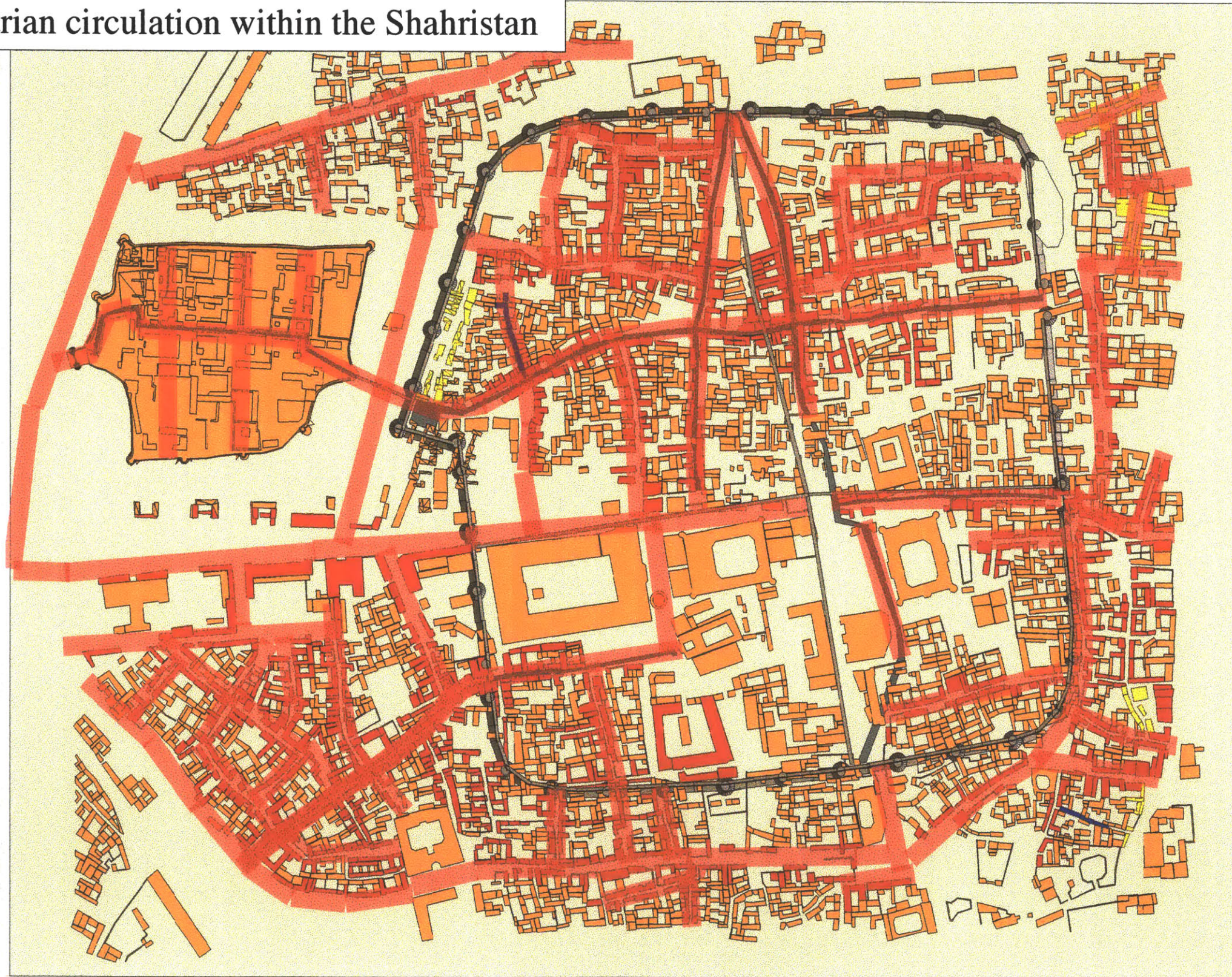
Under the Samanids, the Ark reaches its maximum area of more than 3 hectares. Outside, the walls are covered by blocks of mud mixed with reed, faced with fired bricks. The territory of the citadel was densely populated, as archaeological excavations have shown. In the dig, large domestic structures were discovered. Inside, there were many hearths and badrabs that were located 10-12 meters deep inside the citadel.¹

Archeologists have also found the remains from some table game, beautiful ceramics for household use, glass, beads, buttons, and chemical dishes. In one of the badrabs, we serendipitously discovered a rare find -- a seal (1 by 1 by 0.75 cm), on which there is a mirror image carved out with the name of its owner, Ahmad bin Ismail².

According to some written sources, the citadel of this period had a palace of the ruling dynasty, a treasury and a prison. The mosque was transferred from the citadel in 770 to a place between the citadel and Shakhristan, where it remained until 12 c.

1. *Badrabs* -- medieval garbage pits, are truly a treasure for any archaeologist, as they can find inside them objects testifying to the state of cultural development. They can easily be compared with garbage dumps of today.

2. The owner was the son Ismail Samani, who ruled for only six years and was killed in 914. This is the best evidence that proves the date of this layer.



Bukhara in the 7th - 9th. c. A.D.

Shakhristan.

Under the Samanids, Shahristan had been densely filled with living dwellings. By that time, the walls between different parts of the city had already lost their functions, as numerous badrab pits were placed inside of them. Did the defensive walls along Shakhristan have any purpose? In the 10 c. A.D., in certain areas, buildings were already constructed outside Shahristan. It was discovered that parts of the walls were also used as building blocks, and in the 12 c., their crests served as garbage pits. However, the walls in the north-western part of Shakhristan preserved their function.

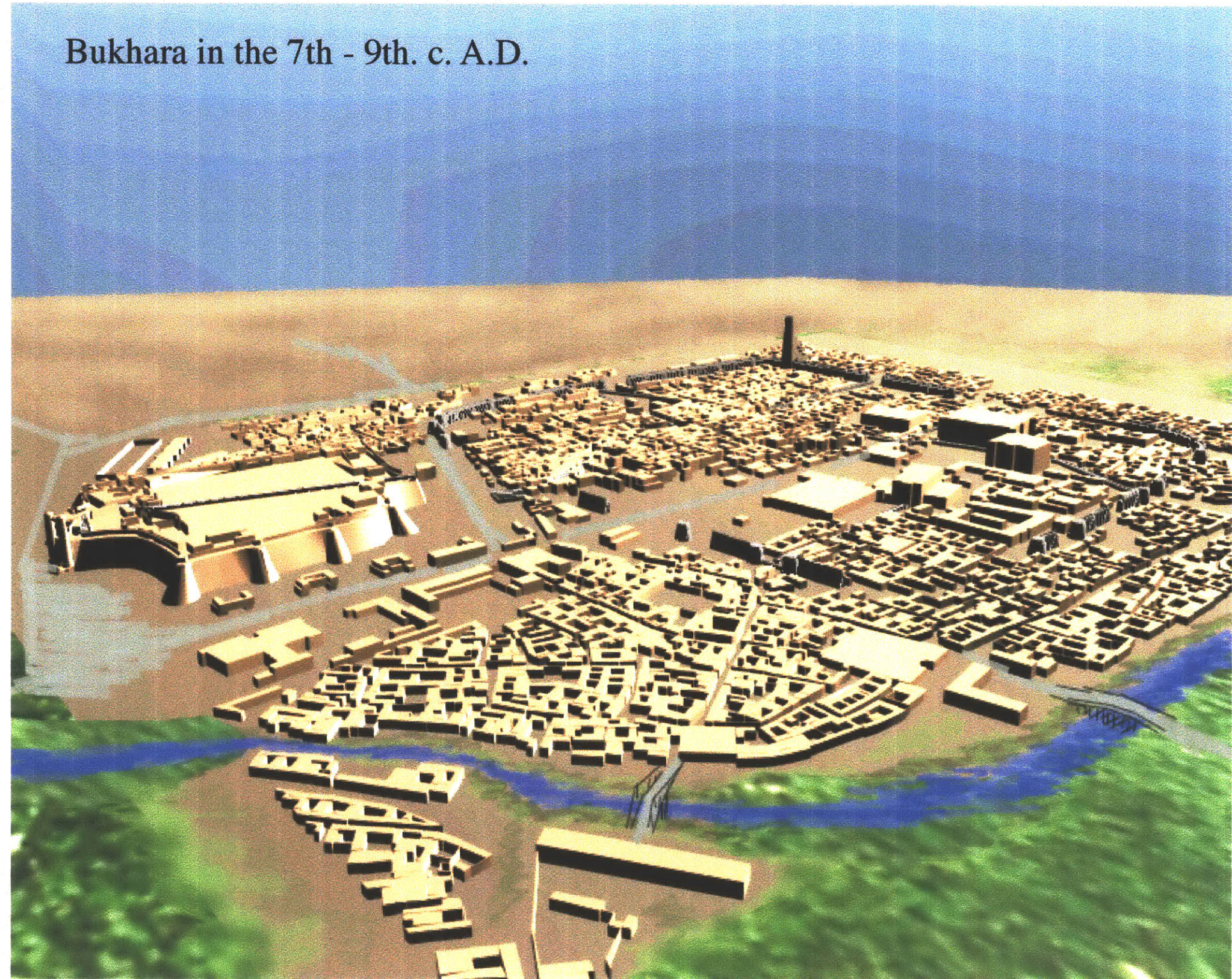
Around Shakhristan, the moat continued to function, and in one of the digs its fortified walls were revealed. The moat was mentioned in the documents of the 16 c. A.D.; in 17-18 c. A.D. it was finally filled with soil and houses were constructed on top of it. The administrative partition between the old part of the town (Shakhristan territory) and the new part (rabad territory) was preserved according to the documents prior to 18 c. The houses were built from damp and fired bricks, which became more widespread in 11th - 12th c. A.D.

Rabad.

The important and disputed moment in research of Bukhara's history is the determination of the territory of the town within the limits of the Rabad (that is, crafts-trade part).

At present, there are several ideas about the Rabad development:

The first one belongs to the researcher Vasili Shishkin. His theory was formulated in the 1940s and was accepted by Lazar Rempel.



The researcher thought that the old cemeteries of Bukhara (Chashma-Aub, Hodzha Chorshanba, Turki Dzhandi, Hodzha Bulgar, Hodzha Nurabad, Hodzha Sessaron) in IX-X c. were situated outside of the city walls, each of which was near one of the city gates. The city under Samanids did not occupy a very large territory yet.

The second proposal was made by Oleg Bolshakov. He believes that Bukhara was once encircled by two Rabads. One was older than a new one and each was surrounded by walls. The inner rabad, whose walls enclosed Shakhristan and the Ark, was about 150 hectares. In the 10th c. A.D., walls of the outer rabad were constructed; the territory of the town inside them was 375-400 hectares.

I believe that for some time Bukhara was composed of four parts (citadel, Shakhristan and two rabads). The inner rabad did encircle Shakhristan and the Ark from all sides, and had a wall with gates. Toward the middle of the 9th c. A.D., this wall did not correspond to the demands of contemporaries and, after the construction of the outer wall, it had lost its independent function and was completely forgotten.

The question about the size of Bukhara within its wall limits from the middle of the 9 c. A.D., reconstructed under the Samanids and constantly fixed up until the Mongol invasion in 1220, was somewhat clarified during the archeological excavations.

In Bukhara one can distinguish the mass of dwellings, that makes the city organically complete. Within the city's fabric the special types of buildings such as mosques and madrasas, played the main role in the direction of the city's development. All these buildings are different in purposes but at the end they all serve the same idea of making the city's structure a complete organism. Enclosure of these special buildings was not predicted by the physical need of the population but was commanded by the spiritual desire of Muslims in Bukhara after the 8th c. A.D.



Shahristan. City grid analyses.
The direction of the city grid is different inside and outside of the Shahristan area



Shahrud river

Several mosques, which were built in the Islamic period, partially changed the existing city grid and influenced the future development of the city.

The urban fabric of Bukhara consists of several types of buildings which are dwellings, commercial buildings and special buildings. It is easy to read a city's urban fabric which has one type of buildings. However, Bukhara is not one of these kind of cities. The reading of the fabric should be done with consideration of all these types of buildings plus the topographical location of the city and its historical heritage. It is very easy to distinguish two types of the city's grids in Bukhara.

The first grid appeared when the city was in the process of its fabric development. This period can be dated by the 4th - 5th c. B.C. The second grid appeared with the appearance of Islam in Bukhara in the 8th c.A.D. after the Arabic conquest. All the religious buildings, directed to the Mecca influenced the later development of the urban fabric of Bukhara.

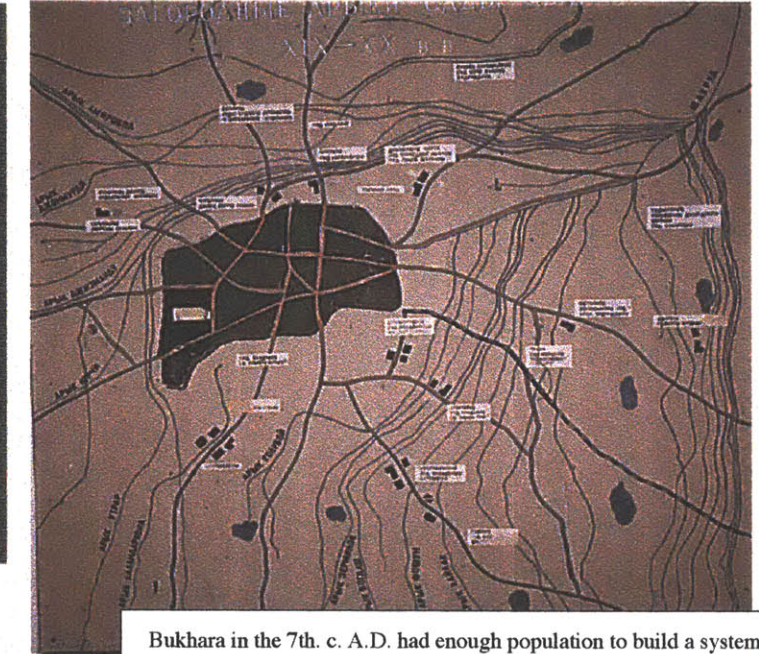


Shahristan wall became unusable and dwellings were spread out around the Shahristan

1. Southern Frontier of the city.

During archeological excavations of Bukhara's necropolises, in particular Turki Dzhandi, situated in the southern part of the city, the hypothesis about determination of the town's frontiers by the inner ring of ancient cemeteries could not be proved. The placement of city's necropolises was determined individually, not by geographic principle, but around the already existing mazar -- a holy place. The necropolis Turki Dzhandi was formed near a small mazar that appeared there in the beginning of the 11 c. above the grave of sheik Dzhandi. It happened soon after the fall of the Samanid dynasty, when settlement on this territory was curtailed. The first graves in the necropolis were located in abandoned houses. In the 9th - 10th c. A.D., when Bukhara became the capital, there were densely populated quarters on the site, to the south of which were ceramics workshops.

In addition, the remains of houses were discovered in the southern part of the city under the mosque Abdal-aziz-khan I, situated in the Dzhuibar. Thus, the southern frontier of the city in the middle of the 9th c. A.D. until the beginning



Bukhara in the 7th. c. A.D. had enough population to build a system of canals around Bukhara to protect it from the flood.

of the 13th c. A.D. was very close to or corresponded to the city's frontier in the 16th c. A.D. to the beginning of the 20th c. A.D.

2. The eastern wall of the city.

The eastern wall of the Rabad passed to the east of Kazi-khan mausoleum and, possibly, enclosed a much larger territory from the east. It is explained by the fact that in antiquity, in this part of town there was the start of the city's canal with a dam and sluices (locks). In addition, old and sacred places of Bukhara which were widely revered were situated there.

3. The western wall of the city.

Almost all the researchers of Bukhara thought that the western wall of rabad passed by Hiaban. Thus, the Samanid necropolis and the revered mazars along the road to Karakul' gates were outside the city. Excavations of this area and the



Shahrستان. Analyses of the most important directions in Shahrستان. Relationship between the Ark and Shahrستان.

area near the gates Shirgaron and Talipach show that these walls have remains of earlier walls underneath them, inside of which there were ceramics from 9 - 10 c. A.D. It was also established that there was a quarter of ceramics workshops behind the Ismail Samani necropolis.

Therefore, the southern, western and eastern border of the city from the middle of the 9 c. A.D. to the beginning of the 20 c. A.D. were almost in the same place, but the northern wall was not.

4. The northern wall of the city.

The northern wall of the city from the middle of the 9th c. A.D. to the beginning of the 13 c. A.D. was about 500 meters to the north of the remains of the famous mazar Abu Hafsa Kabir (Hazreti Imam). The facade of the wall from inside of the city is composed of multi-layered graves (up to 12 layers). The wall of the Rabad was traced by the archeologists for almost 1 km to the West. It was established that its width at the base, along with fix-ups, reached 14 m, while the revealed height is 6-8 m.

Therefore, within the wall limits of the 9 c. A.D. - beginning of 13 c. A.D., Bukhara occupied 2.25 km from north to south, from west to east -- more than 3 km, so that the area within the walls surpassed 700 hectares.

Truly, at that time, Bukhara was one of the biggest cities of Maverannahr.

The density of the city buildings was not uniform. The thickest cultural layers were found to the west and to the east sides of Shakhristan, where the remains of houses and workshops, regularly succeeding each other, compose five and more strata levels. The density of buildings increased from the city outskirts toward the center and was significant along the Shahrud. Sparse buildings characterize the northern part of the Rabad.

The city outskirts, unoccupied by houses, were used for fruit and vegetable gardens belonging to private individuals. Such a situation persisted up to the beginning of the 20 c. A.D.

The Mongol invasion had interrupted the normal flow of life in the city for almost a century. Four Mongol massacres destroyed stable city life at its start. After the last one, in the 1270s, the city was deserted for 7 years, according to old sources. The cultural layer proves that fires and wrecked

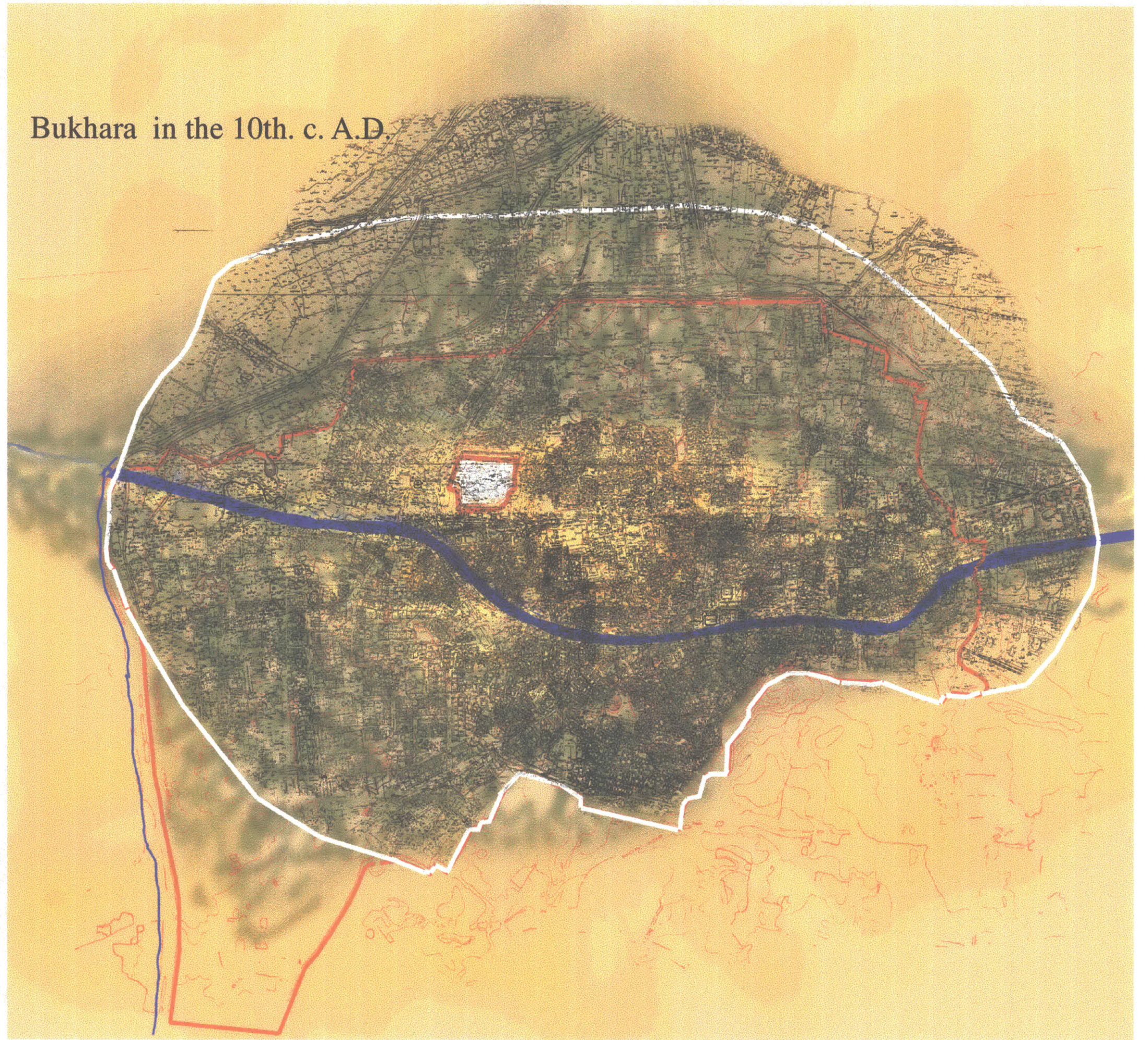
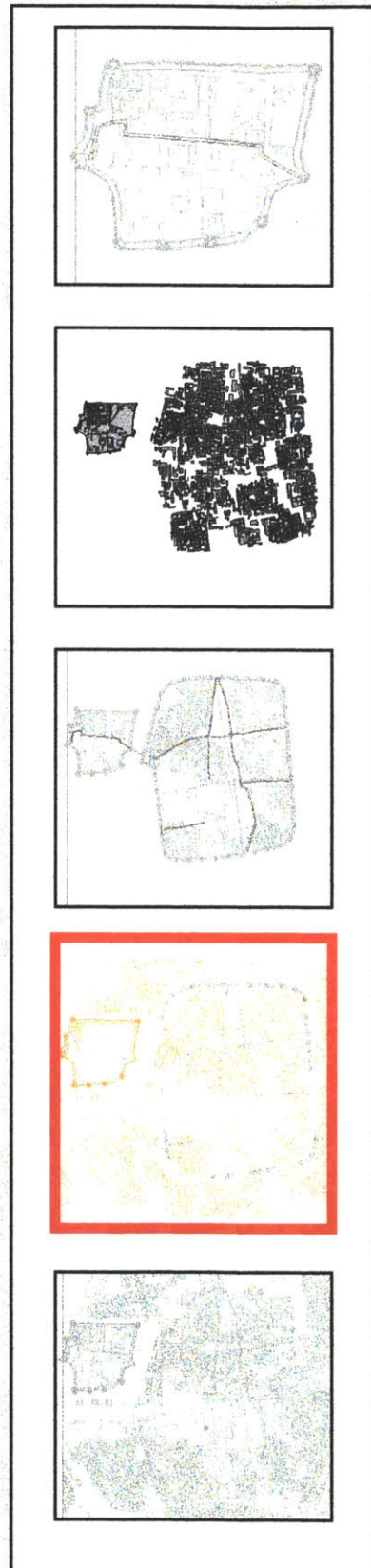
buildings occurred in this period. For a long time, the city remained in ruins. A traveler from Morocco named Ibn Battuta who visited Bukhara in 1333 wrote that city mosques, madras and markets were destroyed, with the "exception of a few".

Bukhara did not lose its importance after the fall of the Samanids in 999; indeed it became a capital again under the Ozbeks in the sixteenth century. But the great age of Bukhara was the tenth century when New Persian literature began to flower in the domain of the Samanids.

Bukhara at the end of the 9th c. A.D. became the capital of the eastern Iranian cultural area, and thereby became the center of a centuries-old Islamic tradition. Moreover it became independent from Western Iran. At the same time Bukhara was recognized as a symbol of the new order of Islamic Iran, which had its past with the religion and civilization brought by the prophet Muhammad. This development of Islam, called the New Persian Renaissance, spread all over the Iran and reached Bukhara as well. Some scholars have de-

scribed it as the reaction of Iranian "nationalism" against Arab Islam. I believe it was rather a successful attempt to save Islam, to release it from its Arab background by making Islam a far richer, more adaptable, and universal culture than it had been previously. The Samanids showed the way to reconcile ancient traditions with Islam, a path followed by other peoples later in the far-flung corners of the Islamic world.

Bukhara in the 10th. c. A.D.



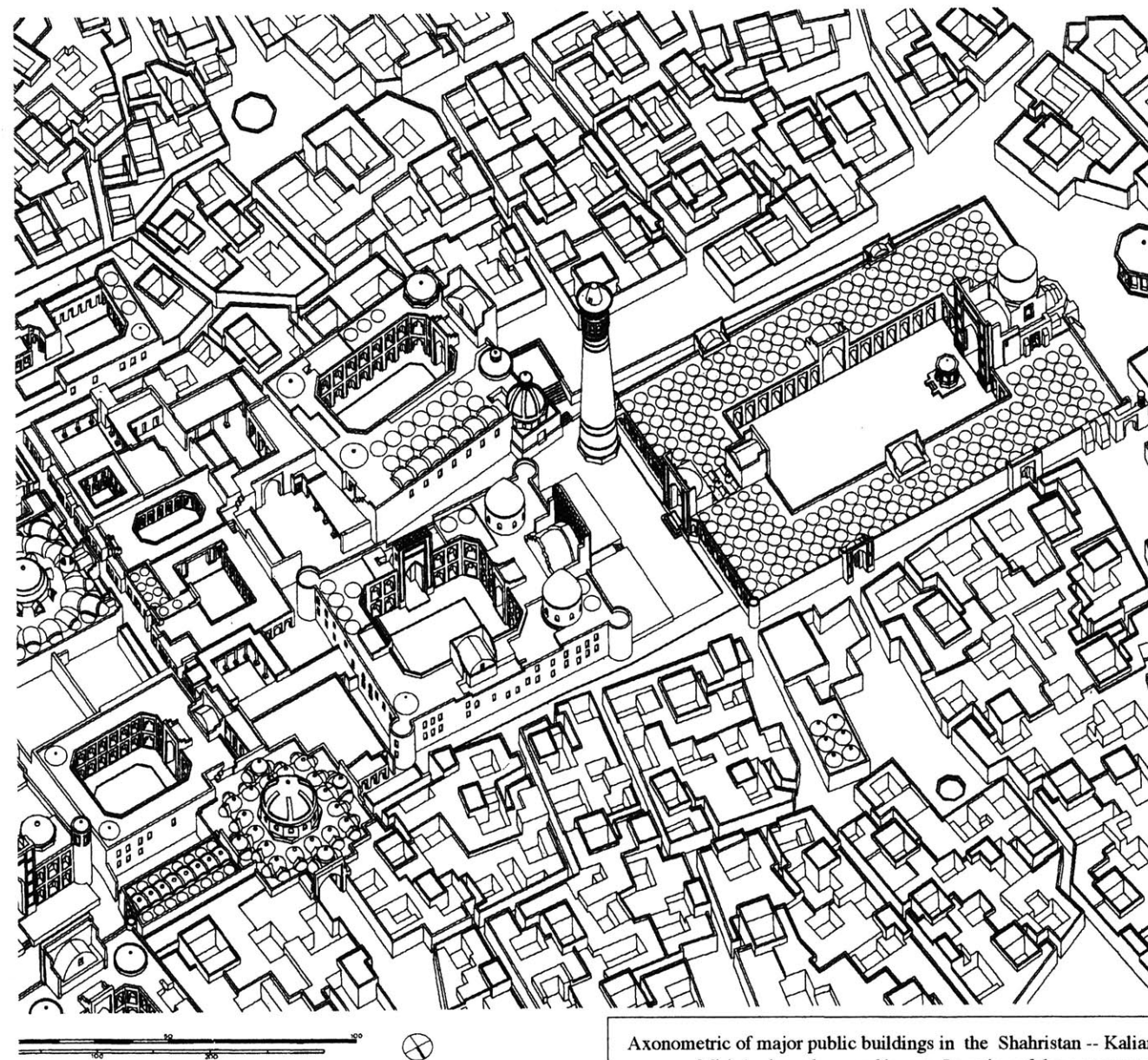
Bukhara - 9th - 15th centuries

Bukhara of Samanid times was described by geographers in the 10th. c. A.D. For all information relating to that period, we are indebted to Narshahi and his disciples. Let us compare this data with descriptions of the contemporary city. The descriptions of the kingdom of Bukhara allow us to see the growth of the city. The city itself did not change sites like other cities and was not spared during attacks and destruction. It was always rebuilt in the same place over the same plan, which was established first in the 9th c. A.D.

Ark - Historical analyses.

The citadel, from the very beginning, was located on the same site: to the east of the plaza or main square, called "Registan" as in Samarkand. At that time, there were two gates into the fortress (now only one gate exists) - the Registan gates (in the Western part of the Ark) and the Gurian gates or "Gates of the Friday mosque" (in the Eastern part of the Ark). There was a straight street connecting one gate to another.

In the fortress on the same site as the palace of the Emir of Bukhara, there was the castle of Buchar-Hudat. Recent excavations by Prof. Nekrasova prove this fact. This palace has a plan that shows it was built before the Arab conquest; it had the seven stone columns that were located corresponding to the layout of the constellation the Big Dipper. In the sources of Narshahi we have a precise description of this palace. On the gates of the castle there was a metal plaque with the architect's name. According to an old superstition, none of the kings fled their enemies and none of them died within the castle - death overtook them only outside the building. Tirini-Bukhara Ahmed al-Kuberi wrote that the castle was demolished during his time (Djumada 1. 522 H/ May 1128 A.D.).



Axonometric of major public buildings in the Shahristan -- Kalian mosque, Miri-Arab madrasa and bazaar. Location of these monuments dictated the development of the urban fabric.

The plaque with the architect's name disappeared. However, from the papers of Istarhi, we now the castle was used by the Samanid dynasty.

However, the last generation of Samanids did not live there, as Makdisi maintains. They used the castle to store treasure and keep prisoners. Perhaps there was also a temple with idols (Buthane). When the old building of the mosque was de-

serted for a larger one, the old mosque was used as a tax office (Divan al Khavadj). Between the 12th c. A.D. and the 13th. c. A.D., the citadel was demolished and rebuilt several times; the last remains of the old buildings were destroyed in 1164-5 A.D. and used as rubble for the new city wall. Unlike most of the cities, the citadel was not inside the Shahristan - it was al-

ways outside the city. There was a plaza between teh Ark and the Shahristan with the mosque, which was built in the second half of the 11th century A.D. Actually, it was removed from the Ark to make it acceptable for the people in Shahristan.

Shahristan - Historical analyses.

According to the plan in Hanikov's book, the highest part of the city was twice as large as the citadel (note by Bolshakov: the area of Shahristan is 3 hectares. , which means that the Shahristan was twice the size of the citadel). On the basis of this historical analysis I can tell exactly where Shahr-istan was situated. Also, Istarhi says that in both the Citadel and Shahristan, there were no sources of water, because they were situated on a hill. Practically, it was no longer surrounded by the fortified wall as it was before. There were seven gates at that time, the names of which we can find in Narshahi's description of Bukhara and the descriptions of Arab geographers. Like elsewhere in Central Asia and Iran, the bazaar in pre-Muslim times was situated outside of the city wall in front of the gates (which were called 'Bazaar gates'). Narshahi also describes them as the Gates of the Spice Sellers (Dar-i Attaran), which are also called Bob-al-Hadid (or "Iron Gates" in Arabic). They were probably situated in the eastern part of Shahristan.

Narshahi describes with great detail that before the Arab invasion, the Shahristan was the only city. There were some castles and villages outside the Shahristan which were not a part of the city. He also gives us information about the topography of the Shahristan. It is probably possible to see the same names of the streets in the contemporary city as those mentioned by Narshahi in his book "History of Bukhara". In contrast to all the other cities, the Shahristan of Bukhara retained its importance even later, when the city expanded. In the southern part of the Shahristan, where the Kalian mosque,

minaret and Mir-i-Arab madras (built in 15 th. - 16 th. c. A.D.) are situated, Arslan Khan Muhammed Suleiman built a new Friday mosque in 1121-22 A.D. Only during the Muslim period was the Shahristan was integrated with all the suburban areas into one city and surrounded by the wall in 849-50 A.D., according to Narshahi. Nowadays this border is known as Rabad.

Rabad - Historical Analyses

In the 10th. c. A.D., another wall was built in addition to the old one. The new wall had a larger radius. Both these walls, like the contemporary wall, had 11 gates. Unfortunately, there is no description about the dimensions between the inner and outer walls. Otherwise it would be easy to see the development of the city through the measurement of its transformation into the capital. Moreover, we can see the answers to the questions about the relationship of the old names of the city gates to the contemporary names. On the northern part of the city, the Samarkand gates have had the same name throughout the whole period of the city existence until now. It is also possible to identify the location of all the other gates. Istarhi gives us the names of all the gates in both walls, retaining their directional sequence; on the outer wall, he starts from the south-western gates or the Plaza gates (Bab-al-Maidan). The road to Khorasan passed through those gates (now the Karakulskie gate), then he describes the Abraham gates (Dar Abraham - now Sheih-Djellal) which are situated to the west from the Plaza gates. It is because of this sequence that we can see, in order of enumeration, the southern side, the eastern side, the northern side and the western side.

It is difficult to find a relationship between the monastery and the present Naubehar quarters. Narshahi wrote that such quarters were in the Shahristan as well as in the suburban areas. A pair of gates of the inner wall of the city, which are

situated in the southern part, were called the 'Mah Mosque gates' after the name of the Mah mosque. Thanks to this data we are able to figure out the location of this shrine. Narshahi says that the mosque was built on the site of the temple for the Idol worshippers (probably the Buddhist cults). It gives us the possibility to take a step back in history.

He describes this site as a place where twice a year idols were on sale. These were probably the images of idols, that can be found now in Samarkand. These idols were used as children's toys at that time.

Special attention should be paid to the Gates of the Mag street (Balo Sikka Mughan), which are located in the north-western part of the city. Most likely it was a part of the city which in Samanid times was called the Castle of the Mags (Kemk-u Mughan). Narshahi says that a number of wealthy Arab merchants, called Kesh-Kushans, moved there after the conquest. In accordance with an agreement signed between the Kuteiba and the local inhabitants, the locals had to share their houses with the Arabs. But this agreement was probably valid for the citizens of the Shahristan only. The population of the Shahristan was converted to Islam. The Kesh-Kushans later chose to leave these houses in the city and built 700 palaces in a suburban area of Shahristan. According to Narshahi's description there was a garden and separate quarters for their servants in front of every house. The new settlement was more crowded than the city itself. According to legend, these palaces were later demolished by a crowd. The doors of houses with idols depicted on them were used for the reconstruction of the Friday mosque. Ahmed al-Kuvabui wrote that it was possible to find these doors in the mosque at that time (12th c. A.D.).

Besides the castle in the citadel, the rulers of Bukhara had other residences in the Registan. Later, the Samanid ruler Nasr II(914 - 943 A.D.) ordered a palace to be built there. In the buildings in front of the palace, the offices (diranha) were set up. Their names are found in Narshahi's descriptions. In

the first year of Mansur b. Nuha's rule (961-976 A.D.), this palace was completely destroyed by fire and was not rebuilt. But Makdisi maintains that the Dar Al-Mulk was situated in the Registan in front of the citadel at that time. He says that he had never before seen such a beautiful and sumptuously decorated building. Until 977 A.D., the Registan had been used as a Musalla ('Namazgah' in Persian). During the Samanid rule, there was a tomb of the dynasty, which was situated on the Dogu-i Milian canal, not far to the north from the Citadel and Registan. The tomb was built by Ismail Ahmedov and deteriorated after the fall of the Samanids.

During the reign of Mansur, the architect Nuna was asked to lay out a new Musalla because the Registan could no longer contain all believers on the necessary days. The new prayer ground was established in 977 A.D. about 112 farsahs (3-4 km.) from the citadel on the road to Samrin. Unfortunately, we no longer have any information about this place. According to an old tradition, all people attended the congregation armed. This tradition was widespread in Maveranahr during the Samanid rule. Between the citadel and the Shahristan, near the Friday mosque, was a large textile workshop (kargah or Bait al- Tiraz). The produce from this workshop was probably exported to Syria, Egypt and Rome. This information leads us to consider as very highly developed the economic status of crafts and trade. Bridles (Huzm al-Nail), made by prisoners, were also one of the items that were exported.

In the 10th. c. A.D., the city became overpopulated and the water and air quality deteriorated considerably. The streets of the city were wide but not wide enough for such a large population. Some poets (Saalibi, Iatima, Beirut) expressed their criticism in harsh terms. Makdisi, for example, says that it was like a garbage pool of a city. Among all its defects, the city's susceptibility to fire was emphasized by Makdisi. At the time, people used wood extensively in building construction -- much more so than today. Even the top part of

the minaret of the main mosque was made of wood. "Once, during a skirmish between two rivals for the throne, there was a fire in the city. The object of that skirmish was the citadel. First, the minaret was burnt and then the mosque caught the fire as well. After this event, the minaret was rebuilt and was made out of burnt brick." (from papers of Narshahi)

The Samanid dynasty was destroyed by the invasion of Bukhara by Ilek Nasr b Ali (10 Zul-i-Kada , October 23, 999 A.D.). The occupants of the city had opposed the last Samanid ruler, Ismail al-Muntasir, for several years till 1004-5 A.D. and even had to leave the capital for a short period of time. The end of Samanids was connected with the loss of the political importance of the city. After this, only chieftains and provincial governors ruled in Bukhara until the 12th c. A.D., when city was reinstated as the capital of the country. Only a few of rulers such as Ilek-Khan or Karakhanid dynasty lived in Bukhara and built their residences there. Even during a period of political turmoil, the city retained its fame as a bastion of Islam and a center of theological learning.

Sandgare - Malic

Bukhara was one of the cities that had to submit to Ghengis Khan (1220 A.D.). The citadel was captured 20 days after the invasion. The victor commanded that the city be ransacked. It was burnt wherever wooden structures were the main building material. The Cathedral and a few castles, which were made of brick, survived. However during the reign of Ygedai, the adopted son of Ghengiz-Khan, Bukhara was revived as a large and highly populated urban center. The city became a center of the sciences. In 1238 - 39 A.D., the city was threatened by social unrest against the Mongols and the aristocracy. However, the provincial governor, Mahmud Ialavash, quelled the revolt and averted the traditional victor's revenge.

In 77 radjab 671H / January 28, 1278 A.D., the Persian Mongols, led by Nikpeiy Bahadur, the general of Il Khan Aba-ki, captured Bukhara and plundered it for seven days. Bukhara



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Shahristan

Rabad.

The wall for the Rabad had been built in Muslim time, and in / 849 - 850 A.D. it had eleven gates, likewise present city wall. They are as the following: 1- the Square gate (al-maiden), leading to the Khorasan road;
2- Ibrahim gate, located to the East from the former;
3- Riv gate;
4- Merdkushan (historic Merdkusha);
5- Kellyabad;
6- Naubekhar;
7- Samarkand gate, the starting point of the road to Samarkand and other

parts of Maverannahr;
8- Fegaskun gate;
9- Ramitan gate;
10- Khadjirun gate, the beginning of the road to Khorezm;
11- Ghushadj.

Narshahi once mentioned in his book that during the epoch of Arab invasion, the city included only Shakhristan. But there are also some evidences in his writing, telling that other segments of the city turned to be significant even in pre-Islamic time, though they might not be included within the borders of the city. The borders of the old city (presumably before the Samanid epoch, going back to Abu Muslim) were marked by another wall, having also eleven gates. The names of those gate are as the following:
1 - Iron gate; 2 - gate of Khassan bridge;
3 & 4 - gate at the Makh mosque;

5 - Rukhna;
6 - gate at the castle of Abu Khisham al- K(?)nani;
7 - gate at the Small bazaar bridge (Suveik);
8 - Fardis(?);
9 - Darvozdje;
10 - gate at magician street;
11 - Samarkand (internal) gate.

According to Narshahi, the principal city canal had the name Rud-i-E(?) (means "gold" or "gold river.") Makdisi wrote: "The river entered the city from Kellyab; the dams, wide sluices and logs were installed there. In summer, during the high water, one log after another were being moved out, while the level of water was reaching higher, and thus, the main stream of the water run to sluice and then to Paikand; the water would flood the city without that smart structure. This place was called Fashun; other sluices, arranged in the similar manner, were located outside the city and called Ras-al-Varag

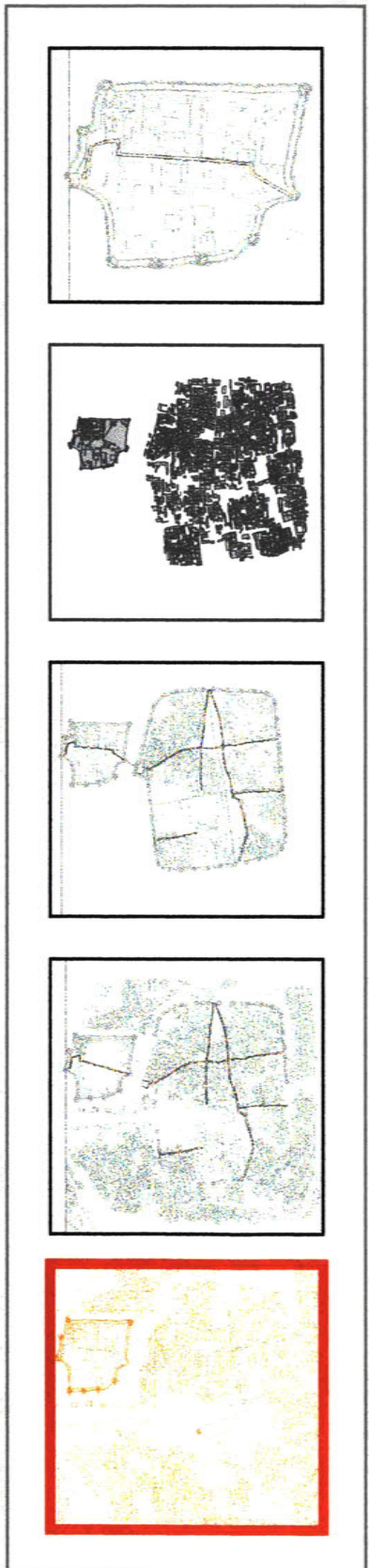
("the Head of a Lock".)

The river comes through the city, runs through bazaars and then is separated into canals on the streets. There are wide open *khauzes* (water reservoirs) with wood buildings at the banks, used for ablution ceremonies. Sometimes, the water running to Paikand floods, and the earth is covered by water. The same year, when I have got there the water has over flew a lot of lands and has damaged the properties."

From this description I assume that the arik (canal) is in the city near present Karshi gate, approximately at the same place as it is at present. Presumably, a bridge was built over the arik, mentioned under the name "Khassan's bridge" in the eastern part of the city."

The location of the bridge gate at the Small bazaar (Su-veik) makes us assume that the arik was running from the city at the gate Shirgaron. Istakhri enumerated little city canals, running from a bigger one - Zer, coming through the city.

Bukhara in the 16th - 19th. c. A.D



Bukhara during the Sheibanid's dynasty

In the XVI century, after a long break, Bukhara again became the capital of the whole khanate, rather than just of the immediate area.

In terms of territory, compared to the Samanid period, the city has shrank in size. Its northern frontier was moved to the south by about 500 m. As a result, one of the most revered sacred places, hazira Abu Hafsa Kabira, now known as a Hazreti Imal or Hodzha Baror, was situated outside the city.

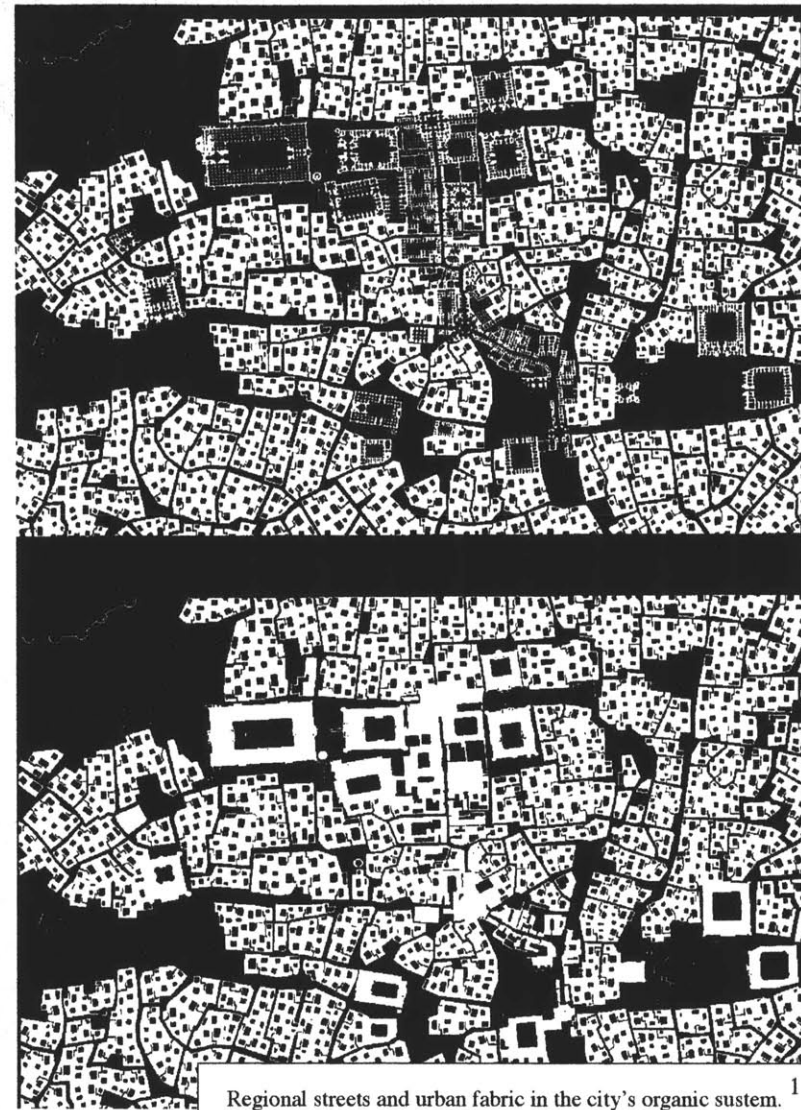
The area of Bukhara within the wall limits in the first part of the XVI c. was about 450 hectares. Under Abdull-khan, the territories of Dzhuiabar sheiks were included in the city. This south-western part of the city is about 40 hectares. The Ark continued to function along with the residence of khans. The territory of Shakhristan still contained many buildings, and the moat around it still functioned. In rabad, the areas adjoining Shakhristan from south, east and west remained populated. On the outskirts but still within the city walls, many areas were without any buildings.

Archeological data

As Archeological excavations show, the city was not built by a unified plan and the city's roads of the 16th c. -- beginning of the 20th c. do not correspond to the streets of early medieval period as it was thought previously.

Several examples:

1. A fragment of one of the main roads of Shakhristan excavated can be traced for more than 100 m near the northern facade of Kalian mosque. In the early medieval period on that site there was a wall from reed and mud.



Regional streets and urban fabric in the city's organic system. 1

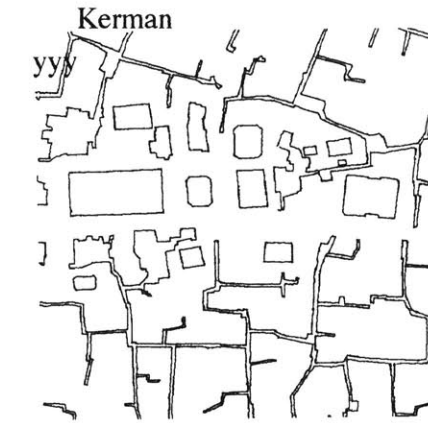
In the 9th - 10th . A.D., on this territory there were living quarters. The insides of an early medieval wall contain numerous *badrabs* -- garbage pits.

In the first quarter of the 12 c., upon the directive of Arelan-khan, a mosque was built here and near its northern facade, a street was formed which exists today.

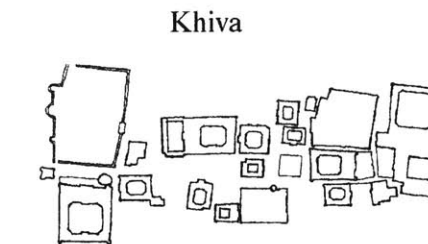
2. During excavations of the trade dome Tak-i Zargaron in the 1950s, the archeologists Vera A. Levina and Nina B. Nemtseva found that in the southern side of the dome, the layers associated with ancient roads are absent.

Bukhara, separated by 170 miles of desert from Samarkand on the Silk Route, fell within the Timurid domain. It was the capital city with its own khanates, before and after the Timurid's reign. Bukhara possessed one of the richest bazaars in the region

TOP LEFT: Bukhara represents the the extend and the fabricated quality of the public space ensemble and the public activity within them.



Ground plan does the opposite by equalizing public and private structures into a unified whole.



The comparison of the main streets in Kerman, Bukhara and Khiva shows the uniform city fabric encroached into the city. Khiva illustrates much more open space than Bukhara. This makes this city more official and uncomfortable to live in.

3. In a prospect hole on the territory of Shakhristan, on the road from north to south not far from the trade dome Tak-i Telpak Furushon, under the road layer more than 2.5 m thick, the remains of buildings from the 13th -beginning of the 12th c. were found.

4. In a prospect hole under the trade dome Tak-i Sarrafon, two meters deep, remains of a building that perished during the Mongol invasion were uncovered. According to archaeological excavations, the cross-roads did not appear here earlier than 14-15 th c. AD.

Therefore, the appearance of the main roads of

Bukhara was a centuries-long process. Their final establishment took place only during the intensive construction and reconstruction of the city structure in the 16th c. During this period, along with restoration of old buildings and demolition of those that were beyond salvation, new cultural and civic structures were erected.

Under Ubaidull-khan, in the first part of the 16th c., near a market that dates to antiquity (area of Magoki Attoi mosque), a unique ensemble the Sarrafon was built. Its organizing center is the dome, uniting sites with various functions: a mosque, a bath house, a bridge across the Shakhrud and a

small water reservoir derived from the channel.

The gates of the Shakhristan (Darb-i Ahanin) belong to the same period. From the gates through the moat toward the trade dome Tak-i Telpak Furushon, (Chaharsuk Ahanin), constructed later, a wooden bridge was built. Today, the remains of the gates are under the gallery connected with the dome in the 19th c.

Under Abdullaziz-khan, in the middle of the 16th c., in Dzhubara, at the end of the Hiaban prospect, the mosque Valik Abdullaziz was built.

Towards the end of the 16th c., Dust Chuhra Okosi, who was

close to Abdulla-khan, constructs a quarter mosque. It is on the same street with honako of Hodzhi Zainutdin.

A few words about the building techniques and materials used during that period.

In the 16th c., a few new methods are introduced into the construction business of Bukhara. The progress is particularly noteworthy in the construction of underground buildings. The depth of the foundation was calculated separately for each building. The foundations are step-like in cross-section; wooden structural cages was put inside them. Anti-salt protection was used in the construction of the buildings.

Bukhara during the Ashtarkhanid's dynasty

From 1599 to 1753, the region was under the rule of Ashtarkhanides. The first ruler of the dynasty was Djani-Muhammad-sultan (also known as Djamibek-sultan) and had the

other name of the dynasty - the Djanids. In literature the dynasty of Djanids is often named the Ashtarkhanid dynasty. He was a descendant of the Ghenghizids who ruled in Astrakhan after the disintegration of the Golden Horde. The last of the Ashtarkhanids was Abul-Faiza who was followed by Muhammad Rakhim, the son of MuhammadKhakim-biy of the Mang-

hit tribe who founded the Manghit dynasty.

The Ashtarkhanid dynasty spent its century and a half of rule fighting the Persians, who claimed Meshhed, Herat and Balkh in Khorasan. Khiva forces repeatedly plundered Maveran-nahr, almost reaching Samarkand and taking many people

back as prisoners. The Ashtarkhanid rulers lacked unanimity in this struggle because the emirs supported the khan at one time, while went over to the enemy at another.

Conclusion

In my thesis I analyzed the urban pattern of Shahr-istan and its relationship to the Ark. I used a new archeological excavations made by Prof. Nekrasova within the Shahr-istan area and in the Ark. Recent archeological excavations reveal several patterns of the old wall in different parts of Shahr-istan. In my thesis I used these data to recreate and an-

alyze a X th. century structure of the Shahr-istan and the Ark and their relationship to the city and society of Bukhara.

A three dimensional model of Shahr-istan and Ark, which I made in order to show their relationship to the city, helped me to analyze the urban fabric of the city and the changes within it that influenced the development of Bukhara.

Assembling together the new archeological data and analysing the two previous proposals through the model, I

studied the urban fabric of the city and created a new theory of the city's development.

Based on the new archeological excavations by Prof. E. Nekrasova, I re-read and re-analyzed the historical development of the Ark and Shahr-istan and the relationship between them in the formation of the city's urban fabric. Most of the previous theories on the development of Bukhara were based on old historical chronicles. The analyses of the urban fabric were not supported by actual archeological facts. How-

ever, all the previous analyses helped me to develop my own proposal on the city's development. Drawing from my intensive fieldworks and surveys in Bukhara during the last two years, my thesis combined the most acceptable ideas and facts into one persuasive proposal of the development of the Bukhara city..

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